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
<table>
<thead>
<tr>
<th>what’s inside</th>
<th></th>
</tr>
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<td>Nasopharyngeal Cancer</td>
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**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.
On behalf of Cleveland Clinic’s Taussig Cancer Institute, I am pleased to share our 2011 outcomes. We are committed to transparency and strive to make data collection easily accessible for our patients. Transparency also allows us to know our strengths and cultivate them, and at the same time, identify areas for improvement.

Our institute is home to more than 250 top cancer specialists, researchers, nurses and technicians dedicated to delivering the most effective medical treatments and offering access to the latest clinical trials for our patients. In recognition of these and other contributions, U.S. News & World Report has ranked Cleveland Clinic as one of the top cancer centers in the nation.

2011 was our busiest year to date with more than 300,000 patient visits. As a National Cancer Institute (NCI)-designated cancer center, Taussig Cancer Institute enrolled nearly 1,800 patients in 347 clinical trials, including 185 patients enrolled at our regional sites. Ninety of these trials were investigator initiated, further illustrating our commitment to exploring the most cutting-edge treatment options for our patients.

Taussig Cancer Institute is a member of the Case Comprehensive Cancer Center (Case CCC), a partnership organization supporting all cancer-related research efforts of Case Western Reserve University, University Hospitals Case Medical Center and Cleveland Clinic. In October, the Case CCC received an N01 consortium contract to conduct Phase II and early clinical trials of the NCI Cancer Therapy Evaluation Program (CTEP) drugs to determine their clinical benefit. The Case CCC is one of only seven centers in the nation to receive an N01 contract. This contract gives our patients access to clinical trials on new anti-cancer agents, especially translational research to identify molecular targets and mechanisms of drug effects.
Our physicians are nationally and internationally known for their contributions to cancer breakthroughs and their ability to deliver superior outcomes for our patients. Last year, 33 of our physicians were recognized for excellence in cancer care in Cleveland Magazine’s Best Doctors rankings. Taussig staff also authored more than 650 publications in high-impact journals, including results from the pivotal Phase 3 AXIS 1032 trial featured in The Lancet, by Brian Rini, MD, Staff Physician in the Department of Solid Tumor Oncology. Axitinib, the drug under investigation in the AXIS 1032 trial, was approved by the FDA to treat advanced renal cell carcinoma in January 2012.

Providing cancer care close to home is integral to our mission. In addition to providing care to more than 28,000 patients annually on our main campus, we offer treatment at 12 other locations in Northeast Ohio including our newest facility, Cleveland Clinic Cancer Center, North Coast campus in Sandusky. Cancer services were also added to the new Twinsburg Family Health & Surgery Center and the Richard E. Jacobs Family Health Center in Avon, Ohio.

In the pages that follow, I am proud to share examples of our strengths in clinical excellence, innovation and patient-centered care. We are inspired by our patients to challenge the status quo, developing new ways to treat cancer today with an ultimate goal of eradicating it in the future.

Brian J. Bolwell, MD, FACP
Chairman, Taussig Cancer Institute
Institute Overview

Comprehensive support services to promote patients’ well-being and address financial, practical, physical, psychological and social concerns:

• Art and music therapy
• Chemotherapy and other anti-cancer treatments orientation classes
• Community outreach
• Financial services
• Genetic counseling and testing
• High Tea at Taussig
• Pain management and palliative medicine
• Pastoral care
• Reflections Wellness (a variety of complementary and aesthetic services)
• Social workers, support groups, psychology and psycho-oncology programs
• The Scott Hamilton CARES Initiative (Cancer Alliance for Research, Education and Survivorship), which includes The 4th Angel Mentoring Program and Chemocare.com

Cleveland Clinic Taussig Cancer Institute is committed to providing each patient with advanced cancer treatment and an extensive range of support programs suited to each patient’s unique needs. At Taussig Cancer Institute, highly skilled and experienced physicians, nurses, physician assistants, social workers, researchers and other specialists work together to provide superior patient care in a collaborative, compassionate and innovative healthcare practice.

Multidisciplinary teams include specialists from surgery, medical oncology and radiation oncology who communicate and collaborate to tailor treatment plans for each patient, consult about specialized treatment needs and coordinate patient care.

Patients benefit from access to the latest, most advanced technology in radiation oncology treatment and pioneering surgical techniques. Clinical trials to evaluate the newest cancer drugs and treatment may provide additional treatment options for individuals with cancer or benign hematologic conditions.

In addition to clinical trials, physicians and researchers at Taussig Cancer Institute conduct internationally recognized basic and translational research to bring scientific advances in the laboratory to advance patient care.

Providing the best possible care for patients includes access to services and programs to help patients navigate the changes and challenges that come with living with cancer. Taussig Cancer Institute offers a wide range of support services to meet the unique needs of patients and their caregivers.

Taussig Cancer Institute regional locations provide convenient access to medical services, radiation oncology treatment, clinical trials, and support services. In 2011, North Coast Cancer Care of Sandusky joined Taussig Cancer Institute to provide outpatient radiation therapy and medical oncology at three locations in Sandusky, Clyde and Norwalk, OH.
Therapies and Volumes

Provided below is an overview of the number of patients seen and range of therapies provided at Taussig Cancer Institute in 2011.

Number of Epic Visits by Department (N = 309,839)

2011

<table>
<thead>
<tr>
<th>Department</th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hematology &amp; Medical Oncology</td>
<td>94,747</td>
<td>88,291</td>
</tr>
<tr>
<td>Regional Medical Oncology</td>
<td>71,576</td>
<td>68,251</td>
</tr>
<tr>
<td>Radiation Oncology</td>
<td>95,169</td>
<td>110,886</td>
</tr>
<tr>
<td>Regional Radiation Oncology</td>
<td>45,405</td>
<td>44,683</td>
</tr>
<tr>
<td>North Coast Cancer Care</td>
<td>2,942*</td>
<td>--</td>
</tr>
</tbody>
</table>

*Volumes since acquisition on 11/16/2011 only.

Epic visits represent all outpatient visits with a Taussig Cancer Institute clinical provider or resource at main campus, family health centers (Avon, Beachwood, North Coast Cancer Care, Independence, Strongsville, Twinsburg and Willoughby Hills) and professional visits at Cleveland Clinic community hospitals (Fairview, Hillcrest and Medina).

Source: Epic

---

National Cancer Institute (NCI)-Designated Cancer Center—
Cleveland Clinic Taussig Cancer Institute is a member of the Case Comprehensive Cancer Center (Case CCC), an NCI-designated cancer center. The Case CCC is a partnership organization supporting all cancer-related research efforts at Case Western Reserve University, University Hospitals Case Medical Center and Cleveland Clinic.
Number of Professional Visits by Department (N = 139,723)
2011

<table>
<thead>
<tr>
<th>Department</th>
<th>Number of Visits 2011</th>
<th>Number of Visits 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hematology &amp; Medical Oncology</td>
<td>80,786</td>
<td>79,110</td>
</tr>
<tr>
<td>Regional Medical Oncology</td>
<td>46,359</td>
<td>46,749</td>
</tr>
<tr>
<td>Radiation Oncology</td>
<td>7,161</td>
<td>7,153</td>
</tr>
<tr>
<td>Regional Radiation Oncology</td>
<td>3,173</td>
<td>3,248</td>
</tr>
<tr>
<td>North Coast Cancer Care</td>
<td>2,244*</td>
<td>--</td>
</tr>
</tbody>
</table>

*Volumes since acquisition on 11/16/2011 only.

Professional (evaluation and management) inpatient and outpatient visits by Taussig Cancer Institute physician staff at main campus, family health centers (Avon, Beachwood, North Coast Cancer Care, Independence, Strongsville, Twinsburg, Willoughby Hills) and Cleveland Clinic community hospitals (Fairview, Hillcrest and Medina).

Source: Professional Revenue Statistics.

Taussig Cancer Institute ranked as the top cancer center in Ohio and 9th in the nation by *U.S. News & World Report* in 2011.
Number of New Patient Visits by Department (N = 14,168)  
2011

<table>
<thead>
<tr>
<th>Department</th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hematology &amp; Medical Oncology</td>
<td>6,015</td>
<td>6,119</td>
</tr>
<tr>
<td>Regional Medical Oncology</td>
<td>3,312</td>
<td>3,444</td>
</tr>
<tr>
<td>Radiation Oncology</td>
<td>2,770</td>
<td>2,815</td>
</tr>
<tr>
<td>Regional Radiation Oncology</td>
<td>1,550</td>
<td>1,435</td>
</tr>
<tr>
<td>North Coast Cancer Care</td>
<td>521*</td>
<td>NA</td>
</tr>
</tbody>
</table>

*Volumes since acquisition on 11/16/2011 only.

New patient professional (evaluation and management) outpatient visits by Taussig Cancer Institute physician staff at main campus, family health centers (Avon, Beachwood, North Coast Cancer Care, Independence, Strongsville, Twinsburg, Willoughby Hills) and Cleveland Clinic community hospitals (Fairview, Hillcrest and Medina).

Source: Professional Revenue Statistics.

In 2011, 1,754 patients participated in 347 clinical trials conducted at the Taussig Cancer Institute including 185 patients participating in 65 clinical trials at regional locations.
Number of Inpatient and Outpatient Visits by Department 2011

<table>
<thead>
<tr>
<th>Department</th>
<th>2011 Visits</th>
<th>2010 Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Outpatient</td>
<td>Inpatient</td>
</tr>
<tr>
<td>Hematology and Medical Oncology</td>
<td>46,100</td>
<td>34,686</td>
</tr>
<tr>
<td>Regional Medical Oncology†</td>
<td>35,105</td>
<td>11,254</td>
</tr>
<tr>
<td>Radiation Oncology</td>
<td>6,790</td>
<td>371</td>
</tr>
<tr>
<td>Regional Radiation Oncology†</td>
<td>2,901</td>
<td>272</td>
</tr>
<tr>
<td>North Coast Cancer Care*</td>
<td>2,203*</td>
<td>41*</td>
</tr>
<tr>
<td>Total</td>
<td>93,099</td>
<td>46,624</td>
</tr>
</tbody>
</table>

*Volumes since acquisition on 11/16/2011 only. †Does not include treatment volumes (for chemotherapy and radiation therapy) at Cleveland Clinic community hospitals.

Professional (evaluation and management) inpatient and outpatient visits by Taussig Cancer Institute physician staff at main campus, family health centers (Avon, Beachwood, North Coast Cancer Care, Independence, Strongsville, Twinsburg, Willoughby Hills) and Cleveland Clinic community hospitals (Fairview, Hillcrest and Medina).

Source: Professional Revenue Statistics.
**Inpatient Admissions**

<table>
<thead>
<tr>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,500</td>
</tr>
<tr>
<td>3,000</td>
</tr>
<tr>
<td>2,500</td>
</tr>
<tr>
<td>2,000</td>
</tr>
<tr>
<td>1,500</td>
</tr>
<tr>
<td>1,000</td>
</tr>
<tr>
<td>500</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

Represents number of patients discharged at main campus by Taussig Cancer Institute physician staff.

Source: Professional Revenue Statistics.

---

**Beds and Chemotherapy Chair Capacity**

<table>
<thead>
<tr>
<th>Inpatient beds* 100</th>
<th>Outpatient chemotherapy chairs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 33 for patients with solid tumors</td>
<td>73 main campus</td>
</tr>
<tr>
<td>• 22 for patients undergoing bone marrow transplantation</td>
<td>63 regional locations*</td>
</tr>
<tr>
<td>• 22 for patients with leukemia</td>
<td>* Excluding Cleveland Clinic community hospitals.</td>
</tr>
<tr>
<td>• 23 for patients receiving palliative care</td>
<td></td>
</tr>
</tbody>
</table>

* Excluding Cleveland Clinic community hospitals.
Regional data represents treatment visits at Taussig Cancer Institute family health centers, excluding main campus and treatment volumes at Cleveland Clinic community hospitals.

Sources: Epic (chemotherapy data); Revenue Statistics (radiation oncology data).
Patient Treatment Visits by Location

Patient Visits

<table>
<thead>
<tr>
<th>Year</th>
<th>Regional</th>
<th>Main Campus</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>23%</td>
<td>77%</td>
</tr>
<tr>
<td>2011</td>
<td>37%</td>
<td>63%</td>
</tr>
</tbody>
</table>

Treatment Visits

<table>
<thead>
<tr>
<th>Year</th>
<th>Regional</th>
<th>Main Campus</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>33%</td>
<td>67%</td>
</tr>
<tr>
<td>2011</td>
<td>28%</td>
<td>72%</td>
</tr>
</tbody>
</table>

Chemotherapy Treatment Visits

<table>
<thead>
<tr>
<th>Year</th>
<th>Regional</th>
<th>Main Campus</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>48%</td>
<td>52%</td>
</tr>
<tr>
<td>2011</td>
<td>32%</td>
<td>68%</td>
</tr>
</tbody>
</table>

Radiation Therapy Treatment Visits

<table>
<thead>
<tr>
<th>Year</th>
<th>Regional</th>
<th>Main Campus</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>17%</td>
<td>83%</td>
</tr>
<tr>
<td>2011</td>
<td>22%</td>
<td>78%</td>
</tr>
</tbody>
</table>

Source: EPIC (chemotherapy data); Revenue Statistics (radiation oncology data). Patients seen by Taussig Cancer Institute staff at main campus, family health centers (Avon, Beachwood, North Coast Cancer Care, Independence, Strongsville, Twinsburg and Willoughby Hills) and professional visits at Cleveland Clinic community hospitals (Fairview, Hillcrest and Medina).
Outpatient and Inpatient Visits by Disease Group or Cancer Site

Number of Visits

GI = Gastrointestinal; Heme = Hematology; GU = Genitourinary; MDS = Myelodysplastic syndromes; CNS = Central nervous system; GYN = Gynecological.

Source: EPSi. Patients seen by Taussig Cancer Institute staff at main campus, family health centers (Avon, Beachwood, North Coast Cancer Care, Independence, Strongsville, Twinsburg and Willoughby Hills) and professional visits at Cleveland Clinic community hospitals (Fairview, Hillcrest and Medina).

Radiation Oncology Procedures by Treatment Type

*Lung (N = 180); Spine (N = 133); Brain (N = 26); Other (N = 23).

Source: Mosaiq.
Expanding Patient Access in the Region

Taussig Cancer Institute significantly expanded cancer treatment services throughout northern Ohio.

“The strength of cancer care at Cleveland Clinic is the access to outpatient and inpatient services in the community. No matter where you live in northern Ohio, the No. 1 cancer program in Ohio is close to home,” says Timothy Spiro, MD, Chairman, Department of Regional Oncology. A total of 26 hematology and medical oncology physicians work out of 12 Cleveland Clinic community hospitals and family health center locations.

- The **Twinsburg Family Health & Surgery Center** opened in July 2011 and is a 190,000 square-foot facility offering specialty services including hematology and medical oncology, with six exam rooms and 14 chemotherapy infusion chairs.

- The **Richard E. Jacobs Family Health Center in Avon** opened in December 2011, housing six exam rooms for hematology and medical oncology outpatient visits and 10 chemotherapy infusion chairs.

- Taussig Cancer Institute also announced in November 2011 that North Coast Cancer Care of Sandusky would join Taussig as the **Department of North Coast Cancer** at Taussig Cancer Institute. North Coast Cancer Care is a full-service cancer treatment center with a team of seven physicians and 70 support staff. North Coast provides outpatient cancer services, including radiation therapy and medical oncology, from three locations in Sandusky, Clyde and Norwalk, OH.
Outcomes Data

Taussig Cancer Institute maintains an extensive tumor registry, which is the source for much of the outcomes data presented in this book. Data included in the outcomes graphs derived from the tumor registry are from patients receiving initial treatment at Cleveland Clinic. Data on more than 147,000 patients have been recorded.

In the case of radiation oncology treatment, the Department of Radiation Oncology also maintains a database. For prostate cancer, radiation and surgery patients are tracked in a single database. Currently, treatment and follow-up data on more than 12,000 patients have been recorded.

Data for some outcomes measures is from Institutional Review Board approved research studies conducted by Cleveland Clinic investigators.

Outcomes measures of survival are presented as overall survival or relative survival as indicated in the title. Overall survival measures include all causes of death (in addition to cancer); relative survival measures include only deaths from cancer.

Where possible, outcome measures include reference to a publicly available source for comparison, such as the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute (http://seer.cancer.gov). Inclusion of these references does not and is not intended to represent controlled, direct comparisons.

In cases where data similar to or related to the measure presented is available in another known, published source, the source is provided for your reference.
**Acute Lymphocytic Leukemia**

**Absolute Lymphocyte Count at Day 28 Independently Predicts Event-Free and Overall Survival in Adults with Newly Diagnosed Acute Lymphocytic Leukemia (N = 198*)**

1996 – 2010

The absolute lymphocyte count (ALC) at Day 28 of induction chemotherapy can be an indicator of bone marrow recovery, as it may be a marker of the body’s immune surveillance against malignant cells. We showed that an ALC ≥ 350/µL on Day 28 predicted for improved overall survival compared with lower ALC. Further characterization of higher risk patients allows for modifications to therapeutic regimens, which may translate into improvements in long-term survival. In addition, these data suggests that targeting the immune system to improve ALC may be a worthwhile strategy in acute lymphocytic leukemia.

Acute Myeloid Leukemia

Hospital Admission Rates for Febrile Neutropenia (FN) in Patients with Acute Myeloid Leukemia (AML) Undergoing Post-Remission Chemotherapy with Fluoroquinolone Prophylaxis (N = 80) 1997 – 2008

**Percent Admission for FN**

<table>
<thead>
<tr>
<th></th>
<th>Treatment Group</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Admission for FN</td>
<td>20</td>
<td>60</td>
</tr>
<tr>
<td>N</td>
<td>52</td>
<td>28</td>
</tr>
<tr>
<td>Admissions</td>
<td>75</td>
<td>42</td>
</tr>
<tr>
<td>Cycles</td>
<td>148</td>
<td>50</td>
</tr>
</tbody>
</table>

FN = Febrile neutropenia.

Patients with acute myeloid leukemia (AML) treated with high-dose cytarabine (HIDAC) chemotherapy followed by fluoroquinolone prophylaxis (treatment group) had fewer and shorter hospital admissions due to febrile neutropenia compared with patients with no fluoroquinolone prophylaxis (control group). Patients treated with fluoroquinolone were at increased risk of developing antibiotic-resistant bloodstream infections with organisms like methicillin-resistant staphylococcus aureus (MRSA), vancomycin-resistant enterococci (VRE), and E. coli, however.

Myelodysplastic Syndromes


<table>
<thead>
<tr>
<th>Factor</th>
<th>Unadjusted HR (95% CI)</th>
<th>P Value</th>
<th>Adjusted HR (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBRT vs RP</td>
<td>2.62 (1.0, 6.91)</td>
<td>0.051</td>
<td>1.24 (0.42, 3.67)</td>
<td>0.700</td>
</tr>
<tr>
<td>PI vs RP</td>
<td>5.87 (2.11, 16.32)</td>
<td>&lt; 0.001</td>
<td>2.85 (0.92, 8.8)</td>
<td>0.069</td>
</tr>
<tr>
<td>PI vs EBRT</td>
<td>2.24 (0.89, 5.61)</td>
<td>0.086</td>
<td>2.29 (0.95, 5.53)</td>
<td>0.065</td>
</tr>
<tr>
<td>Age</td>
<td>1.14 (1.09, 1.20)</td>
<td>&lt; 0.001</td>
<td>1.13 (1.07, 1.2)</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

CI = Confidence interval; EBRT = External beam radiotherapy; RP = Radical prostatectomy; PI = Prostate interstitial brachytherapy.

In a study using Cleveland Clinic databases from surgical, radiation oncology, and medical oncology groups of more than 11,000 patients, it was found that those who underwent definitive radiation treatment for localized prostate cancer did not appear to have a significantly increased risk of subsequent myelodysplastic syndromes (MDS) compared with those undergoing radical prostatectomy, in analyses that controlled for age and incorporated length of follow-up. A trend for MDS development was present for those undergoing radiation with prostate interstitial brachytherapy. These findings are encouraging for both patients and providers who have concerns about the potential effects of therapeutic radiation on development of MDS.

Myeloproliferative Neoplasms

Number of New Patients with Myeloproliferative Neoplasms

Myeloproliferative neoplasms (MPN) are a group of diseases of the bone marrow causing excess production of cells. Cytopenias, acute myeloid leukemia progression, thrombosis and fibrosis are examples of MPN. The MPN program at Cleveland Clinic includes a data registry, blood and bone marrow sample repository, clinical trials, and clinical and translational research.
Modern techniques have reduced the risk of high-dose chemotherapy for patients with amyloidosis, resulting in improved survival after autologous bone marrow transplant.

For reference, the largest study of patients with amyloidosis receiving autologous bone marrow transplants was reported in *Blood*. 2011;118(16):4346-52.

Survival outcomes have not changed despite the increased proportion of high-risk patients receiving allogeneic bone marrow transplants. Fewer patients with low-risk disease, as identified by cytogenetics and molecular markers, are being treated with allogeneic bone marrow transplant.
Although multiple myeloma remains an incurable disease, the inclusion of high-dose chemotherapy in the treatment strategy has lengthened the median duration of remission to approximately six years.

All our patients with large-cell lymphoma are chemo-sensitive leading up to the autologous transplant, and we cure approximately half of them.


Outcomes following autologous transplant for patients with follicular lymphoma are nearly identical to those for patients with large-cell lymphoma, yet the oncology community has been less willing to accept the possibility that patients with follicular lymphoma can be cured.

Patients with lymphoma receive state-of-the-art therapy at Taussig Cancer Institute. As part of our mission to improve outcomes for our patients, we constantly update and review our standard-of-care treatments, participate in clinical trials of new treatment approaches, and work closely with our Bone Marrow Transplant Program. The results of this carefully coordinated and cutting-edge care are reflected in the outcomes shown in the survival curves below. These results are outstanding and among the best reported in major cancer centers in the nation.

**Five-Year Overall Survival of Patients with Diffuse Large B-Cell Lymphoma (N = 280)**

1991 – 2011

Diffuse large B-cell lymphoma is the most common type of non-Hodgkin lymphoma. This figure shows the survival for all recent patients with diffuse large B-cell lymphoma treated at Taussig Cancer Institute. The five-year survival is 54.6% (95% CI, 43.1 – 66.0), showing excellent results that compare favorably with those of other major centers.

CI = Confidence interval.
For reference, published data similar to or related to the measure presented here can be found at: Blood. 2010;116(12):2040–5.
Mantle cell lymphoma is a rare type of non-Hodgkin lymphoma and is challenging to treat. The survival rates for patients treated at Taussig Cancer Institute, shown in this figure, are outstanding, reflecting our use of intensive treatment strategies and new therapies in the context of clinical trials. The five-year survival is 51.6% (95% CI, 30.9 – 72.2).

Hodgkin lymphoma most commonly affects individuals in their 20s and 30s. This figure shows the very good survival for all recent patients with Hodgkin lymphoma treated at Taussig Cancer Institute. The five-year survival is 80.7% (95% CI, 70.6 – 90.9).

The Surveillance, Epidemiology and End Results (SEER) program reports the overall 5-year relative survival (2001-2007 from 17 SEER geographic areas) for patients with Hodgkin lymphoma was 83.9%. http://seer.cancer.gov/statfacts/html/hodg.html.
Patients with the plasma cell disorders multiple myeloma and light-chain amyloidosis seen at Taussig Cancer Institute between 2007 and 2010 have outcomes that compare favorably with outcomes reported elsewhere. These data may reflect care by a specialized healthcare team, common use of maintenance therapy and access to novel therapies, including within the context of clinical trials.

*Patient followed through early 2012.

Most patients with multiple myeloma are seen for relapsed or refractory disease, usually years after diagnosis. As such, analysis of survival “since diagnosis” can include patients with asymptomatic myeloma who are often followed for years before they require treatment, artificially improving survival data. This analysis is based on symptomatic myeloma only.

Based on SEER data, patients with multiple myeloma diagnosed between 2001 and 2007 have five-year relative survival rates of 41.1%.† In our referral base, patients with newly diagnosed symptomatic myeloma have a median five-year overall survival (Kaplan-Meier) of 60.5% (95% confidence interval [CI] 47.0 – 74.0%).

Patients who are seen after exposure to 3 or more different regimens commonly have myeloma resistant to bortezomib and the immunomodulatory drugs lenalidomide and thalidomide, this group of patients has an expected median survival of 9 months† † compared with 14.8 months (95% CI 7.6 – 34.6) in our most extensively pretreated (≥ 4) patient population.
Patients with light-chain amyloidosis who either elected not to undergo high-dose chemotherapy or were not felt to be candidates for this approach, usually because of severe cardiac involvement, had an expected five-year survival from first treatment of > 45%. This compares favorably with a report from Boston University where patients selected for high-dose melphalan and autologous stem cell transplantation based on performance status, age, and cardiopulmonary function had an expected five-year survival of 47%. It may reflect our standard use of intravenous or subcutaneous bortezomib-based therapy since late 2008. Our experience with high-dose melphalan, usually after bortezomib-based induction, is shown in the bone marrow transplant section.


*Patient followed through early 2012.
Multidisciplinary teams comprising surgeons and physicians from the departments of Colorectal and General Surgery, Gastroenterology, Interventional Radiology, Medical Oncology and Radiation Oncology tailor treatment regimens for patients with gastrointestinal cancer. Treatment regimens include adjuvant therapy following surgical resection for tumors at risk for recurrence, as well as systemic therapies for inoperative, incurable advanced disease. Clinical trials provide important treatment options to patients.

Provided below are outcomes for colorectal cancer, which demonstrate superior healthcare outcomes in advanced stage cancer. Disparities in healthcare are a concern at Cleveland Clinic and eliminating healthcare outcomes disparities in underserved populations is a priority.

**Colon Cancer**

*Five-Year Relative Survival of Patients with All Stages of Colon and Rectum Cancer (N = 3,713)*  
1996 – 2007

![Percent Survival Graph](image)

<table>
<thead>
<tr>
<th>Years Since Diagnosis</th>
<th>CC</th>
<th>Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>91.8</td>
<td>91.8</td>
</tr>
<tr>
<td>1</td>
<td>82.2</td>
<td>82.2</td>
</tr>
<tr>
<td>2</td>
<td>75.8</td>
<td>75.8</td>
</tr>
<tr>
<td>3</td>
<td>70.9</td>
<td>70.9</td>
</tr>
<tr>
<td>4</td>
<td>67.1</td>
<td>67.1</td>
</tr>
</tbody>
</table>

Percent Survival = 91.8 82.2 75.8 70.9 67.1

American Joint Committee on Cancer (AJCC) stage I – IV colon and rectum cancer.

CC = Cleveland Clinic.

Five-Year Relative Survival of Patients with Colon and Rectum Cancer by Stage (N = 3,713)
1996 – 2007

Percent Survival 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>I</td>
<td>97</td>
<td>94.7</td>
<td>91.8</td>
<td>89</td>
<td>85.6</td>
</tr>
<tr>
<td>II</td>
<td>97.6</td>
<td>92.5</td>
<td>88</td>
<td>84</td>
<td>79.7</td>
</tr>
<tr>
<td>III</td>
<td>96.9</td>
<td>86.3</td>
<td>78.2</td>
<td>71.7</td>
<td>6</td>
</tr>
<tr>
<td>IV</td>
<td>64.5</td>
<td>37.4</td>
<td>25</td>
<td>18.4</td>
<td>15.9</td>
</tr>
</tbody>
</table>

Percent Survival

Years Since Diagnosis

Stage I CC (N = 1,066)
Stage I Ref
Stage II CC (N = 955)
Stage II Ref
Stage III CC (N = 1,087)
Stage III Ref
Stage IV CC (N = 605)
Stage IV Ref

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

CC = Cleveland Clinic.

Cleveland Clinic is actively participating in efforts to address outcome disparities due to race and other factors. One method employed by the Taussig Cancer Institute is the dissemination of information at minority health fairs and other community education events, including encouraging individuals to complete the recommended cancer screenings that can lead to early detection and treatment of disease and improve treatment outcomes.

American Joint Committee on Cancer (AJCC) stage I – IV colon and rectum cancer.

CC = Cleveland Clinic.

Quality Measure

Removal and Pathological Examination of at Least 12 Regional Lymph Nodes for Patients Undergoing Colon/Rectal Cancer Resection* (N = 208) 2007

<table>
<thead>
<tr>
<th>Stage</th>
<th>All Cases</th>
<th>Cases of Less Than 12 Lymph Nodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>I</td>
<td>60</td>
<td>10</td>
</tr>
<tr>
<td>II</td>
<td>64</td>
<td>5</td>
</tr>
<tr>
<td>III</td>
<td>80</td>
<td>10</td>
</tr>
<tr>
<td>TOTAL</td>
<td>208</td>
<td>26</td>
</tr>
</tbody>
</table>

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).

*Patients ≥ 18 years of age at diagnosis; first or only cancer diagnosis, primary tumor of the colon or rectum; invasive solid tumors only; no clinical or pathological evidence of metastatic disease; all or part of first course of treatment performed at Cleveland Clinic.

At least 12 regional lymph nodes were removed and pathologically examined for 182 of 208 (88%) patients undergoing colon/rectal cancer resection.
Taussig Cancer Institute’s Genitourinary (GU) Oncology Program has made advancements in the treatment of adrenal, bladder, renal, testicular and prostate cancer through research and innovation. The program’s multidisciplinary approach offers exceptional clinical care using surgery, chemotherapy, radiation therapy and innovative clinical treatments for patients in all stages of disease.

**Prostate Cancer**

**Five-Year Relative Survival of Patients with All Stages of Prostate Cancer (N = 6,869)**

**1996 – 2007**

<table>
<thead>
<tr>
<th>Years Since Diagnosis</th>
<th>Percent Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>5</td>
<td>100</td>
</tr>
</tbody>
</table>

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

CC = Cleveland Clinic.

Biochemical Relapse-Free Survival of Patients with *Low-Risk* Prostate Cancer by Treatment Type

(N = 3,865)

1996 – 2011

Percent Biochemical Relapse-Free Survival

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th>5-Year</th>
<th>10-Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>External beam radiotherapy</td>
<td>95 (279)</td>
<td>83 (49)</td>
</tr>
<tr>
<td>Low-dose-rate brachytherapy</td>
<td>95 (481)</td>
<td>87 (54)</td>
</tr>
<tr>
<td>Radical prostatectomy</td>
<td>93 (641)</td>
<td>86 (102)</td>
</tr>
</tbody>
</table>


Biochemical Relapse-Free Survival of Patients with *Intermediate-Risk* Prostate Cancer by Treatment Type (N = 2,470)

**1996 – 2011**

**Percent Biochemical Relapse-Free Survival**

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th>5-Year</th>
<th>10-Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>External beam radiotherapy (N = 497)</td>
<td>85 (232)</td>
<td>74 (50)</td>
</tr>
<tr>
<td>Low-dose-rate brachytherapy (N = 860)</td>
<td>90 (181)</td>
<td>75 (16)</td>
</tr>
<tr>
<td>Radical prostatectomy (N = 1,113)</td>
<td>82 (294)</td>
<td>73 (60)</td>
</tr>
</tbody>
</table>


Biochemical Relapse-Free Survival of Patients with High-Risk Prostate Cancer by Treatment Type (N = 1,728) 1996 – 2011

Percent Biochemical Relapse-Free Survival

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th>5-Year</th>
<th>10-Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>External beam radiotherapy</td>
<td>74 (310)</td>
<td>52 (66)</td>
</tr>
<tr>
<td>Low-dose-rate brachytherapy</td>
<td>74 (42)</td>
<td>NR (0)</td>
</tr>
<tr>
<td>Radical prostatectomy</td>
<td>60 (157)</td>
<td>47 (23)</td>
</tr>
</tbody>
</table>

NR = Not reached.


Cumulative Incidence of Death Due to Prostate Cancer of Patients with Low-Risk Prostate Cancer by Treatment Type (N = 4,050) 1996 – 2009

Percent Cumulative Incidence of Death

![Graph showing percent cumulative incidence of death by treatment type.]

- External beam radiotherapy (N = 494)
- Low-dose-rate brachytherapy (N = 1,347)
- Radical prostatectomy (N = 2,209)

\[ P < 0.021 \]

Percent Cumulative Incidence of Death Due to Prostate Cancer and (Number at Risk) by Treatment Type

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th>5-Year</th>
<th>10-Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>External beam radiotherapy</td>
<td>1.1 (314)</td>
<td>2.6 (54)</td>
</tr>
<tr>
<td>Low-dose-rate brachytherapy</td>
<td>0.3 (416)</td>
<td>4.2 (39)</td>
</tr>
<tr>
<td>Radical prostatectomy</td>
<td>0.1 (755)</td>
<td>0.5 (143)</td>
</tr>
</tbody>
</table>


Cumulative Incidence of Death Due to Prostate Cancer of Patients with *Intermediate-Risk* Prostate Cancer by Treatment Type (N = 2,446)  
1996 – 2009

**Percent Cumulative Incidence of Death**

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th>5-Year</th>
<th>10-Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>External beam radiotherapy (N = 495)</td>
<td>1.1 (266)</td>
<td>6.6 (59)</td>
</tr>
<tr>
<td>Low-dose-rate brachytherapy (N = 735)</td>
<td>0.3 (157)</td>
<td>2.8 (16)</td>
</tr>
<tr>
<td>Radical prostatectomy (N = 1,216)</td>
<td>0.3 (371)</td>
<td>3.0 (91)</td>
</tr>
</tbody>
</table>


Cumulative Incidence of Death Due to Prostate Cancer of Patients with High-Risk Prostate Cancer by Treatment Type (N = 1,717)

1996 – 2009

Percent Cumulative Incidence of Death

$P = 0.56$

External beam radiotherapy (N = 770)
Low-dose-rate brachytherapy (N = 234)
Radical prostatectomy (N = 713)

Percent Cumulative Incidence of Death Due to Prostate Cancer and (Number at Risk) by Treatment Type

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th>5-Year</th>
<th>10-Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>External beam radiotherapy</td>
<td>5.9 (420)</td>
<td>13.9 (59)</td>
</tr>
<tr>
<td>Low-dose-rate brachytherapy</td>
<td>3.1 (38)</td>
<td>6.6 (1)</td>
</tr>
<tr>
<td>Radical prostatectomy</td>
<td>4.0 (251)</td>
<td>9.6 (54)</td>
</tr>
</tbody>
</table>


Renal Cell Cancer

Five-Year Relative Survival of Patients with All Stages of Renal Cell Cancer (N = 2,930) 1996 – 2007

Percent Survival

<table>
<thead>
<tr>
<th>Years Since Diagnosis</th>
<th>CC</th>
<th>Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>91.6</td>
<td>91.6</td>
</tr>
<tr>
<td>1</td>
<td>86</td>
<td>86</td>
</tr>
<tr>
<td>2</td>
<td>81.7</td>
<td>81.7</td>
</tr>
<tr>
<td>3</td>
<td>78.4</td>
<td>78.4</td>
</tr>
<tr>
<td>4</td>
<td>75.9</td>
<td>75.9</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Survival, Epidemiology and End Results (SEER) stage localized, regional or distant renal cancer.

CC = Cleveland Clinic.

A higher percentage of patients with regional renal cell cancer treated at Cleveland Clinic were lymph node-positive, which in part may explain the lower survival outcome for patients with regional disease compared with the SEER reference data.

### Percent Survival 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>Localized</td>
<td>100</td>
<td>98</td>
<td>96.1</td>
<td>93.8</td>
<td>92.1</td>
</tr>
<tr>
<td>Regional</td>
<td>86</td>
<td>73.9</td>
<td>64.2</td>
<td>57.3</td>
<td>53.2</td>
</tr>
<tr>
<td>Distant</td>
<td>52.4</td>
<td>35.1</td>
<td>26.1</td>
<td>22</td>
<td>17.6</td>
</tr>
</tbody>
</table>

Survival, Epidemiology and End Results (SEER) stage localized, regional or distant renal cancer.

CC = Cleveland Clinic.

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 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

Percent Survival 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>I</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>II</td>
<td>100</td>
<td>99.5</td>
<td>97.4</td>
<td>94.7</td>
<td>91.5</td>
</tr>
<tr>
<td>III</td>
<td>96.8</td>
<td>88.3</td>
<td>81.1</td>
<td>76.6</td>
<td>71.6</td>
</tr>
<tr>
<td>IV</td>
<td>81.9</td>
<td>63.3</td>
<td>49.9</td>
<td>34.4</td>
<td>27.5</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>Years Since Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>99.3 (270)</td>
</tr>
<tr>
<td>I</td>
<td>99.3 (934)</td>
</tr>
<tr>
<td>IIA</td>
<td>97.6 (441)</td>
</tr>
<tr>
<td>IIB</td>
<td>95.4 (248)</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

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</td>
<td>89.6</td>
<td>85.6</td>
<td>83.0</td>
<td>79.1</td>
</tr>
<tr>
<td></td>
<td>(141)</td>
<td>(120)</td>
<td>(102)</td>
<td>(91)</td>
<td>(78)</td>
</tr>
<tr>
<td>IIIB</td>
<td>90.5</td>
<td>78.2</td>
<td>78.2</td>
<td>73.1</td>
<td>70.5</td>
</tr>
<tr>
<td></td>
<td>(74)</td>
<td>(63)</td>
<td>(62)</td>
<td>(57)</td>
<td>(55)</td>
</tr>
<tr>
<td>IIIC</td>
<td>89.3</td>
<td>75.9</td>
<td>63.7</td>
<td>55.8</td>
<td>55.8</td>
</tr>
<tr>
<td></td>
<td>(23)</td>
<td>(14)</td>
<td>(9)</td>
<td>(6)</td>
<td>(4)</td>
</tr>
<tr>
<td>IV</td>
<td>63.0</td>
<td>49.7</td>
<td>39.5</td>
<td>30.7</td>
<td>27.1</td>
</tr>
<tr>
<td></td>
<td>(109)</td>
<td>(86)</td>
<td>(54)</td>
<td>(34)</td>
<td>(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

0.7% (N = 2)
Not Considered, Not Administered

99.3% (N = 290)
Considered

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 NCDB is a nationwide oncology outcomes database and is a joint program of the Commission on Cancer (CoC) and the American Cancer Society (ACS).
**Cervical Cancer**

Radiation oncologists and medical oncologists specializing in the treatment of gynecologic cancers work in close collaboration. Gynecologic tumor sites include the vulva, vagina, cervix, uterine body and uterine adnexa. Standard treatment employs high-dose-rate brachytherapy and external beam radiotherapy.

**Overall Survival of Patients with Early-Stage* Cervical Cancer Treated with Radiation by Stage at Diagnosis (N = 208) 1996 – 2011**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Years Since Treatment</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>IB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>93.8 (117)</td>
<td>89.7 (107)</td>
<td>86.1 (92)</td>
<td>81.2 (78)</td>
<td>79.0 (68)</td>
<td></td>
</tr>
<tr>
<td>IIA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100 (28)</td>
<td>92.7 (25)</td>
<td>88.9 (22)</td>
<td>80.2 (17)</td>
<td>80.2 (15)</td>
<td></td>
</tr>
<tr>
<td>IIB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>88.6 (36)</td>
<td>81.1 (32)</td>
<td>75.8 (27)</td>
<td>73.0 (25)</td>
<td>69.9 (21)</td>
<td></td>
</tr>
</tbody>
</table>

*Data for Stage 0, IA and IIA not shown due to N < 10.

CC = Cleveland Clinic.

Overall Survival of Patients with Late-Stage* Cervical Cancer Treated with Radiation by Stage at Diagnosis (N = 151)
1996 – 2011

Percent Survival and (Number at Risk) by Stage*

<table>
<thead>
<tr>
<th>Stage</th>
<th>Years Since Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>IIIB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100.0 (82)</td>
</tr>
<tr>
<td>IVA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>77.8 (4)</td>
</tr>
<tr>
<td>IVB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>66.7 (17)</td>
</tr>
</tbody>
</table>

*Data for Stage 0, IA and IIIA not shown due to N < 10.

CC = Cleveland Clinic.

The Thoracic Oncology Program at the Taussig Cancer Institute offers patients with thoracic malignancies state-of-the-art, multidisciplinary care. In consultation with patients, collaborative teams of surgical, medical and radiation oncologists tailor treatment plans to the needs of each patient. An active clinical research program provides patients with additional treatment options to consider.

The Department of Radiation Oncology actively participates in Cleveland Clinic in-house protocols and is a full member of the Radiation Therapy Oncology Group (RTOG). The department is one of the lead institutions nationally for accrual of patients to RTOG lung cancer clinical trials.

**Lung Cancer**

**Five-Year Relative Survival of Patients with All Stages of Lung Cancer (N = 3,543)**

1996 – 2007

![Graph showing percent survival over years since diagnosis](image)

Percent Survival = 58.5 40 32.1 27.7 25

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

CC = Cleveland Clinic.

Five-Year Relative Survival of Patients with Lung Cancer by Stage at Diagnosis (N = 3,543) 1996 – 2007

Percent Survival by Stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>Years Since Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>I</td>
<td>88.3</td>
</tr>
<tr>
<td>II</td>
<td>83.4</td>
</tr>
<tr>
<td>III</td>
<td>60.2</td>
</tr>
<tr>
<td>IV</td>
<td>29.5</td>
</tr>
</tbody>
</table>

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

CC = Cleveland Clinic.

Since the program began in 2003, Cleveland Clinic has treated more than 300 patients with stage I lung cancer using stereotactic body radiotherapy.

Since the program began in 2003, Cleveland Clinic has treated more than 300 patients with stage I lung cancer using stereotactic body radiotherapy.

![Overall Survival of Patients with Medically Inoperable Stage I Lung Cancer Treated with Stereotactic Body Radiation Therapy (N = 319) 2003 – 2011](chart.png)

Overall Survival of Patients with Medically Inoperable Stage I Lung Cancer Treated with Stereotactic Body Radiation Therapy (N = 319) 2003 – 2011

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

CC = Cleveland Clinic.

Non-Small Cell Lung Cancer

Overall Survival of Patients with Stage II Non-Small Cell Lung Cancer Treated with Radiation (N = 113)
1996 – 2011

Percent Survival

Percent Survival and (Number at Risk) by Stage

<table>
<thead>
<tr>
<th>Years Since Diagnosis</th>
<th>Stage</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IIA</td>
<td>80.0 (14)</td>
<td>62.2 (10)</td>
<td>49.1 (7)</td>
<td>49.1 (6)</td>
<td>49.1 (6)</td>
</tr>
<tr>
<td></td>
<td>IIB</td>
<td>70.5 (59)</td>
<td>51.9 (40)</td>
<td>46.6 (34)</td>
<td>39.6 (28)</td>
<td>38.1 (24)</td>
</tr>
</tbody>
</table>

CC = Cleveland Clinic.

Overall Survival of Patients with Stage III and IV Non-Small Cell Lung Cancer Treated with Radiation (N = 1,110) 1996 – 2011

Percent Survival and (Number at Risk) by Stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>Years Since Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>IIIA</td>
<td>63.5 (237)</td>
</tr>
<tr>
<td>IIIIB</td>
<td>53.1 (164)</td>
</tr>
<tr>
<td>IV</td>
<td>30.1 (117)</td>
</tr>
</tbody>
</table>

CC = Cleveland Clinic.

Small-Cell Lung Cancer

Overall Survival of Patients with Stage III and IV Small-Cell Lung Cancer Treated with Radiation (N = 145)
1996 – 2011

Percent Survival

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>III</td>
<td>55.6 (45)</td>
<td>33.1 (26)</td>
<td>22.7 (17)</td>
<td>20.0 (15)</td>
<td>14.3 (9)</td>
</tr>
<tr>
<td>IV</td>
<td>29.8 (17)</td>
<td>11.7 (6)</td>
<td>11.7 (4)</td>
<td>11.7 (2)</td>
<td>11.7 (2)</td>
</tr>
</tbody>
</table>

CC = Cleveland Clinic.

Esophageal Cancer

At Cleveland Clinic, patients with esophageal cancer benefit from our multidisciplinary care involving a complete assessment by surgical, medical and radiation oncologists. Individualized treatment plans for patients with these malignancies are developed through the collaborative efforts of all specialists. Patients with potentially curable disease typically receive surgery as the foundation of their treatment plan. Clinical research is primarily driven by in-house protocols.

Five-Year Relative Survival of Patients with All Stages of Esophageal Cancer (N = 634) 1996 – 2007

<table>
<thead>
<tr>
<th>Years Since Diagnosis</th>
<th>Percent Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CC</td>
</tr>
<tr>
<td>0</td>
<td>58.8</td>
</tr>
<tr>
<td>1</td>
<td>42.5</td>
</tr>
<tr>
<td>2</td>
<td>35.9</td>
</tr>
<tr>
<td>3</td>
<td>31</td>
</tr>
<tr>
<td>4</td>
<td>27.9</td>
</tr>
</tbody>
</table>

Surveillance, Epidemiology and End Results (SEER) stage localized, regional or distant esophageal cancer.

CC = Cleveland Clinic.

Five-Year Relative Survival of Patients with Esophageal Cancer by Stage at Diagnosis (N = 634) 1996 – 2007

Percent Survival

<table>
<thead>
<tr>
<th>Stage</th>
<th>Years Since Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Localized</td>
<td>81.9</td>
</tr>
<tr>
<td>Regional</td>
<td>61.3</td>
</tr>
<tr>
<td>Distant</td>
<td>30.7</td>
</tr>
</tbody>
</table>

Surveillance, Epidemiology and End Results (SEER) stage localized, regional or distant esophageal cancer.

CC = Cleveland Clinic.

Hypopharyngeal Cancer

Overall Survival of Patients with Stage III and IV Hypopharyngeal Cancer Treated with Radiation (N = 72) 1996 – 2011

Percent Survival and (Number at Risk) by Stage

<table>
<thead>
<tr>
<th>Years Since Treatment</th>
<th>Stage III CC (N = 16)</th>
<th>Stage III Ref</th>
<th>Stage IV CC (N = 56)</th>
<th>Stage IV Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>62.5 (10)</td>
<td>54.7 (28)</td>
<td>50 (8)</td>
<td>46.9 (24)</td>
</tr>
<tr>
<td>2</td>
<td>56.3 (9)</td>
<td>54.7 (28)</td>
<td>43.8 (7)</td>
<td>42.7 (19)</td>
</tr>
<tr>
<td>3</td>
<td>50 (8)</td>
<td>46.9 (24)</td>
<td>43.8 (6)</td>
<td>38.1 (16)</td>
</tr>
</tbody>
</table>

CC = Cleveland Clinic.

Laryngeal Cancer

Overall Survival of Patients with Stage I and II Laryngeal Cancer Treated with Radiation (N = 159) 1996 – 2011

Percent Survival and (Number at Risk) by Stage

<table>
<thead>
<tr>
<th>Years Since Treatment</th>
<th>Stage I CC (N = 88)</th>
<th>Stage I Ref</th>
<th>Stage II CC (N = 71)</th>
<th>Stage II Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>95.4 (82)</td>
<td>86.9 (69)</td>
<td>85.7 (67)</td>
<td>77.7 (56)</td>
</tr>
<tr>
<td>2</td>
<td>90.0 (62)</td>
<td>85.4 (53)</td>
<td>77.2 (46)</td>
<td>70.2 (38)</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>74.9 (53)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CC = Cleveland Clinic.

Overall Survival of Patients with Stage III and IV Laryngeal Cancer Treated with Radiation (N = 190) 1996 – 2011

Percent Survival and (Number at Risk) by Stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>Years Since Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>III</td>
<td>87.4 (54)</td>
</tr>
<tr>
<td>IV</td>
<td>74.2 (84)</td>
</tr>
</tbody>
</table>

CC = Cleveland Clinic.

Major Salivary Gland Cancer

Overall Survival of Patients with Stage IV Cancer of the Major Salivary Glands Treated with Radiation (N = 39) 1996 – 2011

Percent Survival

<table>
<thead>
<tr>
<th>Years Since Treatment</th>
<th>CC</th>
<th>Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>68.4</td>
<td>60.2</td>
</tr>
<tr>
<td>1</td>
<td>60.2</td>
<td>51.2</td>
</tr>
<tr>
<td>2</td>
<td>51.2</td>
<td>44.1</td>
</tr>
<tr>
<td>3</td>
<td>44.1</td>
<td>36.4</td>
</tr>
<tr>
<td>4</td>
<td>36.4</td>
<td>25.0</td>
</tr>
<tr>
<td>5</td>
<td>25.0</td>
<td>18.8</td>
</tr>
</tbody>
</table>

Percent Survival (Number at Risk) = 68.4 (25) 60.2 (22) 51.2 (15) 44.1 (12) 36.4 (9)

Sinonasal Cancer

Overall Survival of Patients with Stage IV Sinonasal Cancer Treated with Radiation (N = 56) 1996 – 2011

Percent Survival

<table>
<thead>
<tr>
<th>Years Since Treatment</th>
<th>CC</th>
<th>Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>78.6</td>
<td>60.2</td>
</tr>
<tr>
<td>1</td>
<td>60.2</td>
<td>49.3</td>
</tr>
<tr>
<td>2</td>
<td>49.3</td>
<td>46.2</td>
</tr>
<tr>
<td>3</td>
<td>46.2</td>
<td>42.8</td>
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<tr>
<td>4</td>
<td>42.8</td>
<td>34.6</td>
</tr>
<tr>
<td>5</td>
<td>34.6</td>
<td>26.3</td>
</tr>
</tbody>
</table>

Percent Survival (Number at Risk) = 78.6 (44) 60.2 (24) 49.3 (16) 46.2 (15) 42.8 (11)

CC = Cleveland Clinic.

Nasopharyngeal Cancer

Overall Survival of Patients with Stage III and IV Nasopharyngeal Cancer Treated with Radiation (N = 54) 1996 – 2011

Percent Survival and (Number at Risk) by Stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>Years Since Treatment</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td>85.0 (16)</td>
<td>79.5 (14)</td>
<td>79.5 (13)</td>
<td>73.2 (11)</td>
<td>73.2 (11)</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>87.1 (25)</td>
<td>87.1 (23)</td>
<td>83.2 (21)</td>
<td>74.7 (16)</td>
<td>65.1 (13)</td>
<td></td>
</tr>
</tbody>
</table>

CC = Cleveland Clinic.

Oral Cavity Cancer

Overall Survival of Patients with Stage I and II Oral Cavity Cancer Treated with Radiation (N = 39) 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>I</td>
<td>84.6 (11)</td>
<td>76.6 (9)</td>
<td>57.4 (5)</td>
<td>57.4 (5)</td>
<td>57.4 (5)</td>
</tr>
<tr>
<td>II</td>
<td>79.6 (18)</td>
<td>74.8 (14)</td>
<td>69.4 (13)</td>
<td>69.4 (13)</td>
<td>63.9 (11)</td>
</tr>
</tbody>
</table>

CC = Cleveland Clinic.

Overall Survival of Patients with Stage III and IV Oral Cavity Cancer Treated with Radiation (N = 151) 1996 – 2011

Percent Survival and (Number at Risk) by Stage

<table>
<thead>
<tr>
<th>Years Since Treatment</th>
<th>Stage III CC (N = 39)</th>
<th>Stage III Ref</th>
<th>Stage IV CC (N = 112)</th>
<th>Stage IV Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>III</td>
<td>79.5 (31)</td>
<td>60.9 (22)</td>
<td>52.6 (19)</td>
<td>47.1 (17)</td>
</tr>
<tr>
<td>IV</td>
<td>67.3 (67)</td>
<td>55.8 (51)</td>
<td>50.0 (40)</td>
<td>45.9 (30)</td>
</tr>
</tbody>
</table>

CC = Cleveland Clinic.

Oral Cavity and Pharynx Cancer

Five-Year Relative Survival of Patients with All Stages of Oral Cavity and Pharynx Cancer (N = 902)
1996 – 2007

Percent Survival = 87.9 77.6 72.5 68 65.3

Surveillance, Epidemiology and End Results (SEER) stage localized, regional or distant oral cavity and pharynx cancer.

CC = Cleveland Clinic.

Five-Year Relative Survival of Patients with All Stages of Oral Cavity and Pharynx Cancer by Race (N = 881) 1996 – 2007

Percent Survival by Race

<table>
<thead>
<tr>
<th>Race</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>76.9</td>
<td>68.2</td>
<td>61.2</td>
<td>53.1</td>
<td>50.9</td>
</tr>
<tr>
<td>White</td>
<td>86.8</td>
<td>76.7</td>
<td>71.9</td>
<td>67.8</td>
<td>65.3</td>
</tr>
</tbody>
</table>

Surveillance, Epidemiology and End Results (SEER) stage localized, regional or distant oral cavity and pharynx cancer.

CC = Cleveland Clinic.

Oropharyngeal Cancer

Overall Survival of Patients with Stage I and II Oropharyngeal Cancer Treated with Radiation (N = 39)
1996 – 2009

Percent Survival and (Number at Risk) by Stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>Years Since Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>I</td>
<td>80 (8)</td>
</tr>
<tr>
<td>II</td>
<td>93.1 (27)</td>
</tr>
</tbody>
</table>

CC = Cleveland Clinic.

Overall Survival of Patients with Stage III and IV Oropharyngeal Cancer Treated with Radiation (N = 542) 1996 – 2010

Percent Survival and (Number at Risk) by Stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>Years Since Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>III</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td></td>
</tr>
</tbody>
</table>

CC = Cleveland Clinic.

Palliative Medicine

The Harry R. Horvitz Center for Palliative Medicine, part of Taussig Cancer Institute, is the only medical program in the United States recognized as a European Society of Medical Oncology (ESMO) Designated Care Center of Integrated Oncology and Palliative Care. The program is also a World Health Organization (WHO) Demonstration Project in Palliative Medicine.

Advanced Directives Discussed with Patient (N = 938)

2011

Percent of Patients Reporting “Yes”

<table>
<thead>
<tr>
<th></th>
<th>2010 (N = 947)</th>
<th>2011 (N = 938)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussed at Admission/Transfer</td>
<td>752</td>
<td>705</td>
</tr>
<tr>
<td>Discussed by Discharge</td>
<td>807</td>
<td>771</td>
</tr>
</tbody>
</table>

N = 938

A total of 938 inpatients were discharged from service or expired.

Symptoms Present at Admission and at Discharge (N = 734)

2011

Percent of Patients Reported

<table>
<thead>
<tr>
<th></th>
<th>Present at Admission/Transfer</th>
<th>Present at Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anorexia</td>
<td>337 273</td>
<td>151 143</td>
</tr>
<tr>
<td>Anxiety</td>
<td>207 116</td>
<td>62 51</td>
</tr>
<tr>
<td>Constipation</td>
<td>62 51</td>
<td>71 49</td>
</tr>
<tr>
<td>Delirium</td>
<td>441 368</td>
<td>242 104</td>
</tr>
<tr>
<td>Depression</td>
<td>550 439</td>
<td>123 118</td>
</tr>
<tr>
<td>Drowsiness</td>
<td>221 203</td>
<td></td>
</tr>
<tr>
<td>Fatigue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nausea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shortness of Breath/Dyspnea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weakness</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Symptoms as reported by inpatients who did not expire on service or received comfort measures only.
Anorexia Status at Discharge

Percent of Patients Reported

<table>
<thead>
<tr>
<th>Status</th>
<th>2010 (N = 628)</th>
<th>2011 (N = 734)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better</td>
<td>133</td>
<td>147</td>
</tr>
<tr>
<td>Same</td>
<td>193</td>
<td>169</td>
</tr>
<tr>
<td>Worse</td>
<td>36</td>
<td>63</td>
</tr>
</tbody>
</table>

N = 133 147 193 169 36 63

Symptoms as reported by inpatients who did not expire on service or received comfort measures only.

Anxiety Status at Discharge

Percent of Patients Reported

<table>
<thead>
<tr>
<th>Status</th>
<th>2010 (N = 628)</th>
<th>2011 (N = 734)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better</td>
<td>44</td>
<td>66</td>
</tr>
<tr>
<td>Same</td>
<td>70</td>
<td>79</td>
</tr>
<tr>
<td>Worse</td>
<td>29</td>
<td>53</td>
</tr>
</tbody>
</table>

N = 44 66 70 79 29 53

Symptoms as reported by inpatients who did not expire on service or received comfort measures only.
Constipation Status at Discharge

Symptoms as reported by inpatients who did not expire on service or received comfort measures only.

Delirium Status at Discharge

Symptoms as reported by inpatients who did not expire on service or received comfort measures only.
Depression and Drowsiness Status at Discharge (N = 299)
Aug 2011 – Dec 2011

Percent of Patients Reported

<table>
<thead>
<tr>
<th></th>
<th>Better</th>
<th>Same</th>
<th>Worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>38</td>
<td>30</td>
<td>14</td>
</tr>
<tr>
<td>Drowsiness</td>
<td>50</td>
<td>24</td>
<td>26</td>
</tr>
</tbody>
</table>

Symptoms as reported by inpatients who did not expire on service or received comfort measures only.

Fatigue Status at Discharge

Percent of Patients Reported

<table>
<thead>
<tr>
<th></th>
<th>2010 (N = 628)</th>
<th>2011 (N = 734)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better</td>
<td>125</td>
<td>175</td>
</tr>
<tr>
<td>Same</td>
<td>317</td>
<td>237</td>
</tr>
<tr>
<td>Worse</td>
<td>56</td>
<td>74</td>
</tr>
</tbody>
</table>

Symptoms as reported by inpatients who did not expire on service or received comfort measures only.
Nausea Status at Discharge

Percent of Patients Reported

<table>
<thead>
<tr>
<th></th>
<th>2010 (N = 628)</th>
<th>2011 (N = 734)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better</td>
<td>203</td>
<td>186</td>
</tr>
<tr>
<td>Same</td>
<td>52</td>
<td>53</td>
</tr>
<tr>
<td>Worse</td>
<td>19</td>
<td>25</td>
</tr>
</tbody>
</table>

Symptoms as reported by inpatients who did not expire on service or received comfort measures only.

Pain Status at Discharge

Percent of Patients Reported

<table>
<thead>
<tr>
<th></th>
<th>2010 (N = 628)</th>
<th>2011 (N = 734)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better</td>
<td>520</td>
<td>389</td>
</tr>
<tr>
<td>Same</td>
<td>59</td>
<td>138</td>
</tr>
<tr>
<td>Worse</td>
<td>9</td>
<td>44</td>
</tr>
</tbody>
</table>

Symptoms as reported by inpatients who did not expire on service or received comfort measures only.
Shortness of Breath (Dyspnea) Status at Discharge

Percent of Patients Reported

<table>
<thead>
<tr>
<th>Status</th>
<th>2010 (N = 628)</th>
<th>2011 (N = 734)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better</td>
<td>130</td>
<td>87</td>
</tr>
<tr>
<td>Same</td>
<td>64</td>
<td>63</td>
</tr>
<tr>
<td>Worse</td>
<td>19</td>
<td>32</td>
</tr>
</tbody>
</table>

Symptoms as reported by inpatients who did not expire on service or received comfort measures only.

Weakness Status at Discharge

Percent of Patients Reported

<table>
<thead>
<tr>
<th>Status</th>
<th>2010 (N = 628)</th>
<th>2011* (N = 435)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better</td>
<td>127</td>
<td>52</td>
</tr>
<tr>
<td>Same</td>
<td>241</td>
<td>153</td>
</tr>
<tr>
<td>Worse</td>
<td>43</td>
<td>42</td>
</tr>
</tbody>
</table>

*Through 7/31/2011.

Symptoms as reported by inpatients who did not expire on service or received comfort measures only.
Comfortable End-of-Life Care

Percent of Patients Reported

<table>
<thead>
<tr>
<th>Year</th>
<th>Comfortable “Yes”</th>
<th>Comfortable “No”</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010 (N = 319)</td>
<td>288</td>
<td>31</td>
</tr>
<tr>
<td>2011 (N = 204)</td>
<td>179</td>
<td>25</td>
</tr>
</tbody>
</table>

For 2011, comfort as reported by 204 patients, including inpatients prior to death in the hospital and patients transferred or admitted to facilitate discharge planning or placement receiving comfort measures only.
Response to Music Therapy Sessions (N = 339)
2011

<table>
<thead>
<tr>
<th>Percent of Patient Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
</tr>
<tr>
<td>96%</td>
</tr>
<tr>
<td>79%</td>
</tr>
<tr>
<td>3%</td>
</tr>
<tr>
<td>1%</td>
</tr>
<tr>
<td>4%</td>
</tr>
<tr>
<td>0%</td>
</tr>
<tr>
<td>0%</td>
</tr>
</tbody>
</table>

Response as reported by patient and family members.

Music therapists had 339 music therapy visits (talking with or without music therapy) with patients hospitalized at Cleveland Clinic main campus palliative medicine unit in 2011. Both patients and family were present during music therapy. For patients able to vocalize consent during music therapy sessions, in 99% of the sessions (200 of 201 sessions), patients agreed to the music therapist returning. A total of 163 patients received music therapy.
Symptom Status Immediately Following Music Therapy (N = 143) 2011

Patient reported mood was rated using a pictorial scale (0 = happy face to 4 = sad face), whereas anxiety, depression, pain and shortness of breath were based on patient reported status scale (0 = none to 10 = worst possible) as reported before and after music therapy.

A total of 163 patients received music therapy while hospitalized at Cleveland Clinic main campus palliative medicine unit in 2011. Some patients participated in multiple sessions and not every symptom was assessed in every session. Symptoms not present at (or rated at) the beginning and end of music therapy were not included in this data.
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 — Taussig Cancer Institute

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

2010 – 2011

<table>
<thead>
<tr>
<th>Percent</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Good</td>
<td>80</td>
</tr>
<tr>
<td>Good</td>
<td>20</td>
</tr>
<tr>
<td>Fair</td>
<td>0</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
</tr>
<tr>
<td>Very Poor</td>
<td>0</td>
</tr>
</tbody>
</table>

**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 — Taussig Cancer 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

<table>
<thead>
<tr>
<th>Domain</th>
<th>2010 (N = 523)</th>
<th>2011 (N = 611)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharge Information Given</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctor Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room Clean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Medications Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsiveness to Needs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quiet at Night</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Press Ganey, a national hospital survey vendor
International Phase III Study Compares Treatments for Kidney Cancer

Cleveland Clinic oncologist Brian Rini, MD, is the Principal Investigator for an international Phase III trial comparing the investigational agent axitinib with sorafenib in patients with previously treated advanced renal cell carcinoma. The AXIS 1032 trial is the first trial to compare two targeted therapies against each other in patients with kidney cancer who have relapsed or been unresponsive to previous treatment.

The Phase III study results were presented at the American Society of Clinical Oncology (ASCO) 47th Annual Meeting in June 2011. Study data revealed a delay in cancer progression by an average of two months for patients treated with axitinib versus sorafenib.

“Before this study, we had limited proven options for previously treated patients. Now, we can better understand how to build an effective sequence of treatments for patients with relapsed or refractory kidney cancer,” says Dr. Rini.

The AXIS trial included 723 patients in 22 countries including nine patients treated at Cleveland Clinic. Previous Phase III studies of other FDA-approved drugs compared their effectiveness against placebo or cytokines.

Certain subgroups of patients in the study showed even greater response to axitinib. For example, in patients who were previously treated with cytokines, axitinib extended median progression-free survival to more than a year. Complete or partial response to treatment more than doubled in patients treated with axitinib compared to sorafenib.

Researchers are now conducting a front-line trial of axitinib and sorafenib in a head-to-head study in both previously treated and previously untreated patients with advanced kidney cancer.

Myelodysplastic syndromes (MDS) represent a diverse group of hematologic cancers characterized by low blood counts, most commonly decreased red blood cells. Myelodysplastic syndromes categories have traditionally been based on the number of abnormal-looking immature cells (blasts), the degree of cell shape distortion and the type of chromosomal abnormalities present. Ring sideroblasts (RS) are abnormal iron deposits that form around the cell nucleus. The presence of RS in patients with other clinical and laboratory findings suggestive of MDS suggests a diagnosis of refractory anemia with ring sideroblasts (RARS), a type of MDS. Why RS are present and their relevance to MDS are unknown. Researchers from the laboratory of Ramon V. Tiu, MD, of Cleveland Clinic announced findings suggesting that mutations in a gene called SF3B1 are responsible for the formation of RS and contribute to the pathogenesis of MDS. The product of SF3B1 is important in a normal bodily process called splicing, whereby RNA is modified after transcription (creation of complementary RNA copy of the DNA sequence), leading to a protein product important in sustaining normal physiologic function. These findings are the first to implicate the splicing mechanism in the pathogenesis of MDS.

National Cancer Institute Consortium Contract for Cancer Clinical Trials

Determining the clinical benefit of emerging new cancer drugs is fundamental to improving treatment outcomes for patients. Collaboration and partnership with other organizations is essential to evaluate new drugs and share results for the benefit of patients with cancer.

As a member of the Case Comprehensive Cancer Center (Case CCC), Taussig Cancer Institute will expand its collaborative efforts to determine the clinical benefit of emerging new cancer drugs. Last October, Case CCC received an N01 consortium contract to conduct Phase II and early clinical trials of National Cancer Institute (NCI) Cancer Therapy Evaluation Program (CTEP) drugs to determine their clinical benefit.

The N01 consortium is a partnership between Case CCC, The Ohio State University, Georgetown University and Roswell Park. Case CCC is a partnership organization that supports all cancer-related research efforts at Case Western Reserve University, University Hospitals Case Medical Center and Cleveland Clinic.

The CTEP is a program within the Division of Cancer Treatment and Diagnosis that plans, assesses and coordinates all aspects of cancer clinical trials and testing of drugs in the clinic. The mission of the CTEP is to improve the lives of patients with cancer by finding better ways to treat, control and cure cancer.
Mobile Linear Accelerator for Intraoperative Radiotherapy

A new mobile linear accelerator in use at Cleveland Clinic Taussig Cancer Institute increases the efficiency and safety of delivering intraoperative radiotherapy. Mobetron (IntraOp Medical Corp.) is a relatively small and lightweight linear accelerator system for intraoperative radiotherapy. The mobile linear accelerator eliminates transferring patients from the operating room to radiation therapy and back again. This process improvement decreases the overall procedure time, resulting in reduced exposure to anesthesia for the patient and lower risk of infection associated with transporting the patient.

New Radiation Therapy Technology Shortens Treatment Time

Taussig Cancer Institute radiation oncologists began treating patients using a new type of radiation therapy delivery technology that greatly reduces setup and treatment times. Volumetric arc therapy delivers radiation to the entire volume of the area targeted for treatment as opposed to a fixed-beam direction, which delivers radiation slice by slice. Our Varian (Palo Alto, CA) and Elekta (Stockholm, Sweden) linear accelerators are equipped to deliver volumetric arc technology, improving dose accuracy and reducing treatment times to three to five minutes.

Precision Patient Positioning for Radiation Therapy

The physical positioning of patients and monitoring for accurate positioning during treatment is critical during radiation therapy. Taussig radiation oncologists have employed new tools to ensure precise patient position prior to each radiation treatment. AlignRT (Vision RT Inc., UK) uses nonradiation optical imaging technology to verify patient position in real time. Cleveland Clinic is one of the first hospitals in Ohio to use AlignRT for daily setup for patients with breast cancer, a particularly useful application of the technology. This 3-D imaging technology also provides monitoring of patient movement and positioning during treatment.
Cleveland Clinic Original Member Site of Cancer Immunotherapy Trials Network (CITN)

Immunotherapy holds promise as an alternative to traditional treatments such as chemotherapy, surgery and radiation. Developing new immunotherapy treatments requires experience, laboratory expertise to support research, and collaboration with other researchers and institutions in immunotherapy trials.

Cleveland Clinic Taussig Cancer Institute was selected as one of 27 original member sites in the U.S. and Canada to participate in the Cancer Immunotherapy Trials Network (CITN). The CITN is charged with accelerating the development of new compounds that have been discovered but are not readily available for treating patients with cancer. The network’s mission is to select, design and conduct early-phase trials using priority agents with known and proven biologic function and to provide the high-quality research data essential to develop cancer treatments for patients.

Immunotherapy “trains” the immune system to recognize a cancer cell as a foreign invader, similar to the way the immune system recognizes a virus. The immune system then locates and destroys residual tumor cells, typically with minimal side effects.

Headquartered at Fred Hutchinson Cancer Research Center (Seattle, WA), the CITN will establish a network of leading academic immunologists to conduct multicenter research. These immunologists will examine promising new agents that boost patients’ immune systems to fight cancer. The initiative is funded by the National Cancer Institute.

Bench to Bedside: FDA Approves Investigational New Drug (IND) for Phase I Clinical Trial in Patients with High-Risk Sickle Cell Disease

Research developed in the laboratory of Yogen Saunthararajah, MD, of Cleveland Clinic moves to the bedside in a Phase I clinical trial. Dr. Saunthararajah has obtained investigational new drug (IND) approval from the Food and Drug Administration for a Phase I clinical trial of combination therapy using oral decitabine and oral tetrahydrouridine in high-risk sickle cell disease.

In the laboratory, Dr. Saunthararajah and collaborators have demonstrated that combination oral decitabine and oral tetrahydrouridine can produce beneficial results. Specifically, the combination produces a unique epigenetic effect that does not damage DNA in cells and addresses multiple pharmacologic limitations of decitabine alone. In a Phase I trial, this combination therapy will be evaluated in treating patients with high-risk sickle cell disease and some types of cancer.


Chemo Robot Improves Quality, Patient Safety and Employee Safety

Preparing and handling chemotherapy medications is a dangerous task that requires extreme precision in order to provide high-quality care to patients and maintain patient and employee safety.

Taussig Cancer Institute is the first location in the U.S. to implement the APOTECAchemo Robot, a new robotic device developed by Loccioni Humancare (Italy) for the preparation of patient-specific doses of chemotherapy medications.

Testing of the robotic device started in mid-2011 and the first patient dose was prepared in October. The robot uses barcodes, vial characteristics and photographic label verification to identify drugs and fluids. It uses the density of each drug and precision weight measurements at each step of the process to verify the accuracy of the medication being prepared.

According to Angela Yaniv, PharmD, Cleveland Clinic Pharmacy, “This is the first IV compounding robot that is fully functional in a real-life situation.” Once the device is fully validated and approved by the Ohio Board of Pharmacy, the number of doses prepared by the robot will increase over time as it is incorporated in the work flow requirements of the pharmacy.
Adaptive Drug Resistance in Lung Cancer Cells

Targeted therapies for cancer are limited by recurrence of resistant disease after an initial response to treatment. Research led by Patrick Ma, MD, MS, of Cleveland Clinic is uncovering the adaptive response among tumor cells that gives rise to early drug resistance in lung cancer cells. Results indicate that a subpopulation of lung cancer cells that escape epidermal growth factor receptor (EGFR) kinase inhibitors are therapeutically susceptible to B-cell lymphoma 2 (Bcl-2) homology domain 3 mimetic agents. This discovery provides information about resistant disease that may advance efforts to cure mutated EGFR lung cancer. Cancer Res. 2011 Jul 1;71(13):4494-4505.

Time-lapse video microscopy images of epidermal growth factor receptor (EGFR) kinase inhibitor (erlotinib)-sensitive cells treated with erlotinib for up to nine days shows “early” survivors that evade tyrosine-kinase inhibitor (TKI) treatment. (A) Tyrosine-kinase inhibitor-resistance cells in erlotinib sensitive cell lines. (B) After up to nine days of erlotinib treatment, cytoskeletal functions and cell proliferation are highly inhibited. (C) Reversal of cytoskeletal function and cell proliferation inhibition after 11 days of erlotinib withdrawal.
Genetic Markers Linked to Barrett's Esophagus, Esophageal Adenocarcinoma and Thyroid Cancer

Research conducted by Charis Eng, MD, PhD, Hardis/ACS Professor and Chair and Director of the Genomic Medicine Institute of Cleveland Clinic Lerner Research Institute, has identified mutations in three genes specific to patients with Barrett's esophagus (BE) and esophageal adenocarcinoma (EAC). Barrett's esophagus is thought to be a precursor to EAC. However, EAC is typically diagnosed at an advanced stage when the prognosis is poor.

Dr. Eng led researchers at 16 U.S. institutions to identify and evaluate 298 patients with BE, EAC or both. Three genes, MSR1, ASCC1 and CTHRC1, were mutated in 11% of patients. These mutations “reflect what is normally considered a moderate-to high-penetrance genetic load for a disease,” notes Eng. Identifying genetic markers for BE and EAC could help assess risks, accelerate early detection and improve disease management.

In a separate study, Dr. Eng and her team found that inherited alterations in one of three genes appears to increase the risk of developing thyroid cancer. Mutations in the PTEN gene were associated with a higher risk of follicular cancer and the SDH and KLLN genes confer a higher risk of papillary thyroid carcinoma. Identifying the genes involved in cancer is important because gene-specific personalized surveillance and management can be implemented. Approximately 3,000 patients were examined and tracked in the study.


Selected Publications

**Hematologic Oncology and Blood Disorders**

**Benign Hematology**


**Bone Marrow Transplant**


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*Taussig Cancer Institute staff authored over 655 publications in 2011.*

*For a complete list, go to clevelandclinic.org/outcomes.*


**Bone Marrow Failure**


**Leukemia/Myelodysplastic Syndromes**


Sekeres MA. If Nostradamus were treated for MDS. *Blood*. 2011 Jan 13;117(2):374-375.


Lymphoma


**Multiple Myeloma**


**Hematology — Unspecified**


**Solid Tumor Oncology**

**Adenocarcinoma**


**Central Nervous System**


**Eye**


Gastrointestinal


Genitourinary


Gynecological/Women's Health


Melanoma


Phase I/Experimental Therapeutics


Upper Aerodigestive


**Palliative Medicine**


**Translational Hematology and Oncology Research**


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Vice Chairman, Operations
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Brad Pohlman, MD

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Timothy Gilligan, MD

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Daniel Lindner, MD, PhD
Patrick Ma, MD, MS
Ramon Tiu, MD
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**General Patient Referral**
24/7 hospital transfers or physician consults
800.553.5056

**Taussig Cancer Institute Appointments/Referrals**
216.444.7923 or toll-free 866.223.8100

**Bone Marrow Transplant Program Appointments/Referrals**
This internationally recognized program offers autologous, allogeneic, reduced-intensity, related and unrelated transplants. Cell sources include bone marrow, peripheral stem cell and umbilical cord blood transplants for treating patients with leukemias, lymphomas, and other hematological malignancies and bone marrow failure states.
216.445.5600 or 800.223.2273, ext. 55600

**Bone Marrow Failure Clinic Appointments/Referrals**
This subspecialty clinic offers expertise in aplastic anemia, myelodysplasia, single-lineage cytopenias, paroxysmal nocturnal hemoglobinuria, large granular lymphocytic leukemia and other immune-mediated hematologic diseases.
216.445.5962 or 800.223.2273, ext. 55962

**Radiation Oncology Appointments/Referrals**
216.444.5571 or 800.223.2273, ext. 45571

**Cancer Answer Line**
For questions or concerns about cancer, or to schedule a second opinion (Monday through Friday, 8 a.m. to 5 p.m.)
216.444.7923 or toll-free 866.223.8100

**Helen Meyers McLoraine Patient Resource Center**
Staffed by two clinical nurse specialists and an administrative coordinator, the center is open Monday through Friday, 8 a.m. to 5 p.m. Resources include:
- Free pamphlets and informational brochures
- Computer for Internet access and searches
- A room for nurse/patient discussions, teaching and educational video viewing

- Listings and registration for support groups and other patient-related events
- Listings of resources, such as wigs, transportation and lodging

On the Web at clevelandclinic.org/cancer

**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**
216.445.2547 or 800.223.2273, ext. 52547

**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

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800.890.2467
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Beachwood Family Health and Surgery Center
26900 Cedar Road
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216.839.3000

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Moll Cancer Pavilion
18101 Lorain Ave.
Cleveland, OH 44111
216.476.7000

Hillcrest Hospital
6780 Mayfield Road
Mayfield Heights, OH 44124
440.312.4500

Independence Cancer Center
6100 Westcreek Road, Suites 15, 16
Independence, OH 44131
Medical oncology: 216.524.7979
Radiation oncology: 216.447.9747

Lorain Family Health and Surgery Center
5700 Cooper Foster Park Road
Lorain, OH 44053
440.204.7400 or 800.272.2676

Medina Hospital
Medina Office Building
970 E. Washington St.
Medina, OH 44256
330.721.5700

North Coast Cancer Centers – Clyde
509 W. McPherson Highway
Clyde, OH 43410
419.547.9500

North Coast Cancer Centers – Norwalk
272 Benedict Ave.
Norwalk, OH 44857
419.660.2637

North Coast Cancer Centers – Sandusky
417 Quarry Lakes Drive
Sandusky, OH 44870
419.626.9090

Richard E. Jacobs Health Center
33100 Cleveland Clinic Blvd.
Avon, OH 44011
440.695.4000

Strongsville Family Health and Surgery Center
16761 SouthPark Center
Strongsville, OH 44136
440.878.2500 or 800.239.1098

Twinsburg Family Health and Surgery Center
8701 Darrow Road
Twinsburg, OH 44087
330.888.4000

Willoughby Hills Family Health Center
2570 SOM Center Road
Willoughby Hills, OH 44094
440.943.2500 or 800.807.2888

Wooster Milltown Specialty and Surgery Center
721 E. Milltown Road
Wooster, OH 44691
330.287.4500 or 800.451.9870
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 goal is for all patients to receive all the recommended care for which they are eligible. An aggregated “all or nothing” measurement approach to monitoring multiple publicly reported process-of-care measures for heart failure, acute myocardial infarction, pneumonia and surgical patients is trending positively.

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.

*Source: Performance Accelerator Suite Program maintained by the University HealthSystem Consortium (UHC) https://www.uhc.edu/*
Cleveland Clinic established a 2011 target ICU surveillance rate of 1.33 central line-associated bloodstream infections (CLABSI) 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.
Medical Emergency Team Event Volume*
2009 – 2011

![Bar chart showing the number of events for 2009, 2010, and 2011.](chart)

*Excluding events originating in ORs and ICUs

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

![Bar chart showing the percent for 2009, 2010, and 2011.](chart)

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.
Improving Quality, Safety and the Patient Experience

**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)**

Cleveland Clinic 2010*
Cleveland Clinic 2011*

*Source: Press Ganey, a national hospital survey vendor

**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.

100
80
60
40
20
0

Rate Hospital

% 9 or 10
(0 – 10 scale)

Would Recommend Hospital

% “definitely yes”

Nurse Communication
Responsiveness to Needs
Doctor Communication
Room Clean
Quiet at Night
Pain Management
New Medications Communication
Discharge Information Given

(Options: always, usually, sometimes, never)

% always

% yes

*Source: hospitalcompare.hhs.gov.
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.PREFER.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

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 Mikkael Sekeres, MD; Ruth Lagman, MD; Mary Cusick; and Megan Kilbane.
Every life deserves world class care.