Patients First
Quality counts when referring patients to hospitals and physicians, so Cleveland Clinic has created a series of Outcomes books similar to this one for many of its institutes. Designed for a healthcare provider audience, the Outcomes books contain a summary of our surgical and medical trends and approaches, data on patient volume 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 mean we necessarily 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 that have documented relationships with improved outcomes. When process measures are unavailable, we report volume measures; a volume/outcome relationship has been demonstrated for many treatments, particularly those involving surgical technique.

Cleveland Clinic also supports transparent public reporting of healthcare quality data and participates in the following public reporting initiatives:

- Joint Commission Performance Measurement Initiative (www.qualitycheck.org)
- Centers for Medicare and Medicaid (CMS) Hospital Compare (www.hospitalcompare.hhs.gov)
- Leapfrog Group (www.leapfroggroup.org)
- Ohio Department of Health Service Reporting (www.odh.state.oh.us)

Our commitment to providing accurate, timely information about patient care is designed to help patients and referring physicians make informed healthcare decisions. We hope you find these data valuable. To view all our Outcomes books, visit Cleveland Clinic's Quality and Patient Safety website at clevelandclinic.org/quality/outcomes.
Dear Colleague:

I am proud to present the 2007 Cleveland Clinic Outcomes books. These books provide information on results, volumes and innovations related to Cleveland Clinic care. The books are designed to help you and your patients make informed decisions about treatments and referrals.

Over the past year, we enhanced our ability to measure outcomes by reorganizing our clinical services into patient-centered institutes. Each institute combines all the specialties and support services associated with a specific disease or organ system under a single leadership at a single site. Institutes promote collaboration, encourage innovation and improve patient experience. They make it easier to benchmark and collect outcomes, as well as implement data-driven changes.

Measuring and reporting outcomes reinforces our commitment to enhancing care and achieving excellence for our patients and referring physicians. With the institutes model in place, we anticipate greater transparency and more comprehensive outcomes reporting.

Thank you for your interest in Cleveland Clinic’s Outcomes books. I hope you will continue to find them useful.

Sincerely,

Delos M. Cosgrove, MD
CEO and President
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<td>Institute Overview</td>
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<td>Pediatric Anesthesiology</td>
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<td>Pediatric Cardiothoracic Surgery</td>
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<td>Developmental and Rehabilitative Pediatrics</td>
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<td>Center for Autism</td>
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<td>Pediatric Behavioral Health</td>
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<td>Pediatric Critical Care Medicine</td>
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<td>The Fetal Care Center</td>
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<td>Pediatric Gastroenterology</td>
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<td>General Pediatrics</td>
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<td>Pediatric General Surgery</td>
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<td>Neonatology</td>
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<td>Pediatric Neurology</td>
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<td>Children's Hospital Nursing</td>
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<td>Pediatric Hematology/Oncology</td>
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<td>Pediatric Transplant</td>
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<td>Innovations</td>
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<tr>
<td>New Knowledge</td>
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<tr>
<td>Staff Listing</td>
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<td>Referral Contact Information</td>
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<td>Institute Locations</td>
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<td>Cleveland Clinic Overview</td>
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<td>Online Services</td>
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<tr>
<td>eCleveland Clinic</td>
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<td>DrConnect</td>
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<tr>
<td>MyConsult</td>
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Chairman’s Letter

Many things set Cleveland Clinic Children’s Hospital apart from other pediatric facilities. We are an integral part of the world-renowned Cleveland Clinic, where more than 200 pediatric specialists form the foundation of our Children's Hospital. We provide our patients and families 24/7 access to board-certified, on-site specialists and research expertise.

Our collaborative, multidisciplinary approach and secure electronic medical records allow pediatricians, regardless of location, to partner with our specialists to develop innovative care plans and provide the best care possible. Through this technology, patients and their parents can rest easier, knowing that they will receive world-class care, whether they are treated at the Cleveland Clinic Children's Hospital’s main campus, at one of our 12 community hospitals, at one of our 14 family health centers or, through electronic connectivity, with their own home-town doctor.

We are proud of our many residency and fellowship programs, and our research activities, which support our vision to lead a world-class system of comprehensive healthcare for children, where innovation, discovery and partnership ensure superior patient care. Our pediatric heart specialists have helped test and refine minimally invasive devices for correcting heart defects and improving blood flow. In partnership with the Fetal Care Center, we have been able to improve cardiac blood flow in babies in utero.

Cleveland Clinic Children’s Hospital Fetal Care Center brings together high-risk obstetricians, neonatologists and pediatric specialists when complications arise while a baby is still in the womb. The team helps parents plan for prompt intervention to ensure the best possible outcome.

If children need surgical intervention, our pediatric surgeons operate in state-of-the-art pediatric surgical suites. They work with a team of dedicated pediatric anesthesiologists, with an emphasis on minimally invasive surgery, minimizing pain and scarring to facilitate a speedy recovery. Our pediatric urologists have even pioneered robotic surgical techniques.
In addition, our Pediatric Intensive Care Unit (PICU) and Neonatal Intensive Care Unit (NICU) are staffed 24 hours a day by on-site, board-certified intensivists and neonatologists who provide leading-edge interventions, including ECMO.

Finally, Cleveland Clinic Children's Hospital continues to serve as the only comprehensive pediatric transplant center in Northern Ohio, performing heart, lung, liver and kidney transplantation.

Thank you for your interest in Cleveland Clinic Children's Hospital. I am pleased to share our 2007 Outcomes book with you.

Robert Wyllie, MD  
Calabrese Chair of Pediatrics  
Physician-In-Chief, Cleveland Clinic Children's Hospital  
Chairman, Pediatric Institute
Cleveland Clinic Children’s Hospital has been providing world-class, family-centered care to infants, children, adolescents and families since 1921. More than 200 pediatric specialists and subspecialists within Children’s Hospital provide state-of-the-art care for complex medical problems. Our pediatricians and pediatric specialists also care for children at family health centers throughout Northeast Ohio and at community hospitals, where we have dedicated Pediatric Emergency Departments, Neonatal Intensive Care Units and Pediatric Specialty Clinics. At Cleveland Clinic Children’s Hospital, the patient comes first, wherever they receive care.

In the hospital, pediatric hospitalists direct a child’s care through Family-Centered Rounds (FCR). FCR provide daily bedside discussions with the child’s care providers, including specialists, residents and nurses, as they coordinate the care plan. In the Intensive Care Unit, our pediatric intensivists offer 24/7 coverage by board-certified physicians and experienced approximately 2 percent better-than-expected survival for risk-adjusted mortality.

Our Children’s Hospital pediatricians and specialists provide the full spectrum of primary, specialty and subspecialty care. Some of our department programs are highlighted below:

**Digestive Disease.** Our sophisticated, pediatric-only – therefore, family friendly – endoscopy suite includes streamline detection technology, such as capsule endoscopy, and features high-definition endoscope monitors that provide an unparalleled view of the digestive tract. Our pediatric digestive disease experts evaluate and treat all gastrointestinal and liver disorders in infants, children and adolescents. We have one of the largest inflammatory bowel disease centers in the United States, logging more than 10,000 visits annually. Our pediatric digestive disease specialists are as committed to research as they are to patient care. They are conducting groundbreaking research funded by the National Institutes of Health (NIH) on fatty liver disease and obesity in children.

**Epilepsy and Neurology.** Cleveland Clinic Children’s Hospital neurologists and neurosurgeons are also recognized for the state-of-the-art care that they provide to more than 10,000 children annually. Our neurosurgeons are experienced in epilepsy surgery, brain tumor surgery, craniofacial procedures involving the skull, and surgery that relieves hydrocephalus and spasticity. They have helped to refine the use of the slender scope to navigate fluid-filled chambers within the brain, a technique called neuroendoscopy. The Pediatric Epilepsy Monitoring Unit records activities for more than 400 children annually with uncontrolled seizures and our epilepsy specialists see more than 2,000 children each year.

**Cancer Care.** Infants, children, adolescents and young adults with cancer or blood disorders require the best diagnostic tools and therapies available. Our pediatric oncologists care for young patients with leukemia, lymphoma, sarcomas, brain tumors, rare childhood cancers or other malignancies. Our participation in the Children’s Oncology Group and other national study groups gives our patients access to more than 100 national trials of investigational cancer therapies at any given time.

**Transplantation.** Cleveland Clinic Children’s Hospital is the only comprehensive pediatric transplant center in Northern Ohio, treating patients from infancy through young adulthood and offering heart, liver, lung and kidney transplantation. We are initiating a small bowel transplant program in 2008.

- Our success rate for heart transplant is consistently higher than the national average, and we are one of the select centers worldwide to have performed more than 1,000 pediatric heart transplants. We offer young patients waiting for transplant life-saving “bridge” treatment with mechanical hearts, and our heart surgeons are participating in a 10-year NIH program to develop an artificial heart small enough to fit in an infant's chest.

- Our pediatric liver transplant team is one of the most experienced in the nation, offering living donor, split-graft and deceased donor transplants.

- Our Kidney Transplant Center has more experience with pediatric kidney transplantation than any other program in Northeast Ohio, and is affiliated with a dedicated Pediatric Dialysis Unit.
**Rehabilitation.** The Children's Hospital Shaker Campus, also known as Cleveland Clinic Children's Hospital for Rehabilitation, is one of a handful of accredited, freestanding U.S. pediatric rehabilitation hospitals. The hospital offers rehabilitation for children recovering from trauma, surgery or a complex hospital stay, and for children with chronic illnesses or whose medical needs are complex.

When children suffer from disabling pain that affects school attendance and limits everyday activities, our Pediatric Pain Rehabilitation Program at Shaker Campus offers two weeks of inpatient and outpatient care. A multidisciplinary team provides individualized care that focuses on both child and family for the best long-term results.

**Programs and Centers.** Other innovative Children's Hospital initiatives include the Center for Pediatric and Congenital Heart Diseases, where catheter interventions are combined with surgery and our specialists team with industry to develop devices; the ADHD Center for Evaluation and Treatment and its unique Medication Monitoring Program; the Fetal Care Center, where pediatric surgeons and neonatologists collaborate with high-risk obstetricians to achieve the best outcomes for children when problems arise during pregnancy; and the Center for Autism at the Debra Ann November wing in the Lerner School for Autism.

### 2007 Children's Hospital Systemwide Statistics

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Daily Census</td>
<td>224</td>
</tr>
<tr>
<td>Inpatient Discharges (Does Not Include Newborns)</td>
<td>11,471</td>
</tr>
<tr>
<td>Number of Beds</td>
<td>397</td>
</tr>
<tr>
<td>Number of Pediatric Board-Certified Subspecialists</td>
<td>121</td>
</tr>
<tr>
<td>Number of Subspecialty Fellows</td>
<td>28</td>
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</tbody>
</table>

### Systemwide Statistics, Continued

#### Outpatient Visits

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Pediatrics</td>
<td>271,001</td>
</tr>
<tr>
<td>Physical, Occupational and Speech Therapy</td>
<td>35,092</td>
</tr>
<tr>
<td>Other</td>
<td>29,088</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>19,919</td>
</tr>
<tr>
<td>Neurosciences</td>
<td>16,331</td>
</tr>
<tr>
<td>Heart Center</td>
<td>13,778</td>
</tr>
<tr>
<td>Gastroenterology</td>
<td>10,672</td>
</tr>
<tr>
<td>Behavioral Health</td>
<td>9,931</td>
</tr>
<tr>
<td>Cancer Center</td>
<td>8,243</td>
</tr>
<tr>
<td>Orthopaedics</td>
<td>6,446</td>
</tr>
<tr>
<td>Endocrinology</td>
<td>4,900</td>
</tr>
<tr>
<td>Post-Acute Medicine</td>
<td>4,355</td>
</tr>
<tr>
<td>Pulmonary Medicine</td>
<td>3,448</td>
</tr>
<tr>
<td>Nephrology</td>
<td>2,968</td>
</tr>
<tr>
<td>General Surgery</td>
<td>2,840</td>
</tr>
<tr>
<td>Allergy</td>
<td>2,662</td>
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<tr>
<td>Developmental Pediatrics</td>
<td>1,458</td>
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<tr>
<td>Infectious Disease</td>
<td>1043</td>
</tr>
<tr>
<td>Fetal Care/ Developmental Follow-Up</td>
<td>291</td>
</tr>
</tbody>
</table>

**Total Outpatient Visits**: 444,466

#### Surgical Cases

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Surgery</td>
<td>1,370</td>
</tr>
<tr>
<td>Cardiothoracic Surgery</td>
<td>171</td>
</tr>
</tbody>
</table>

**Total Cases**: 1,532

#### Pediatric Cardiology

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Procedures</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac Catheterization Procedures</td>
<td>443</td>
<td></td>
</tr>
<tr>
<td>Pediatric Echocardiograms</td>
<td>3,926</td>
<td></td>
</tr>
<tr>
<td>Other Diagnostic Procedures</td>
<td>583</td>
<td></td>
</tr>
</tbody>
</table>

**Total Cases**: 4,952

#### Pediatric Gastroenterology

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Procedures</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pediatric Endoscopy</td>
<td>1,187</td>
<td></td>
</tr>
<tr>
<td>Other Diagnostic Procedures</td>
<td>1,083</td>
<td></td>
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</tbody>
</table>

**Total Cases**: 2,270

#### Patient Days

<table>
<thead>
<tr>
<th>Category</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>55,067</td>
</tr>
<tr>
<td>PICU</td>
<td>3,446</td>
</tr>
<tr>
<td>NICU</td>
<td>16,221</td>
</tr>
</tbody>
</table>

**Total Days**: 74,734
Postoperative Nausea and Vomiting (PONV)

Postoperative nausea and vomiting is a leading cause of delayed discharge and/or unplanned hospital admission after outpatient surgery in children. PONV occurs twice as frequently in children as in adults. The two most common surgical procedures associated with PONV are strabismus surgery and adenotonsillectomy. The incidence of PONV in children having strabismus surgery ranges from 37-80 percent without anti-emetic therapy. Some anesthetic techniques and the use of prophylactic anti-emetics can decrease the incidence of PONV. For example, the use of combination antiemetics has reduced the incidence of PONV to 5-9 percent after strabismus surgery.

The pediatric anesthesiologists at Cleveland Clinic strive to reduce PONV in high-risk patients and surgical procedures by providing up-to-date anesthetic techniques that have been proven effective in reducing vomiting in the postoperative period.

Post-strabismus surgery nausea and/or vomiting (a major morbidity) was measured from the Post-Anesthesia Care nursing records of pediatric patients who had received low-dose ondansetron and dexamethasone. Sixty charts were chosen at random from a total of 112 procedures between April 1, 2006 and Oct. 31, 2006. Five percent of these patients experienced in-hospital nausea and/or vomiting\(^1\). This compares favorably with the benchmark of 5 percent by Splinter.*

PONV After Strabismus Surgery (N=60)

The lowest reported incidence of PONV following tonsillectomy is 15.6 percent in children who received combination anti-emetic therapy. Post-tonsillectomy and/or adenoidectomy nausea and/or vomiting (a major morbidity) were measured from the Post-Anesthesia Care Nursing Record of pediatric patients who had received low-dose ondansetron and dexamethasone. Thirty patient charts selected at random from 58 tonsillectomies, which included 19 adenoidectomies from Dec. 1, 2006 to Feb. 28, 2007, were studied. Two patients suffered post-tonsillectomy nausea and/or vomiting. This was much lower than the benchmark. The incidence of vomiting in the recovery room was 6.7 percent.

* No anti-emetic therapy

Laryngospasm (closure of the glottis) during general anesthesia can be a life-threatening event in children because of the subsequent decrease in oxygenation. This is especially a risk in pediatric patients because of their small airways, rapid metabolism (elevated oxygen consumption) and decreased FRC.

We have documented the occurrence of laryngospasm in our pediatric patients (18 years of age or younger) as reported in our ARKS (Anesthesia Record Keeping System) and from our “Intra Operative Anesthesia Quality Indicators” check list on our paper anesthesia records. This includes 5,046 pediatric anesthetics during 2007, excluding pediatric congenital cardiac anesthetics.

Laryngospasm was reported on 45 occasions or 8.9/1,000 pediatric anesthetics. It was treated with positive pressure on 22 occasions, with propofol on 20 occasions, with succinylcholine on one occasion and with subsequent intubation on five occasions. Some patients received more than one treatment. On nine occasions treatment was not noted.

Historically, laryngospasm has been reported in 7.9/1,000 anesthetic episodes in both adult and child anesthetics in 1984, 16.6/1,000 children 0-16 years of age in 1990, and 8.2/1,000 pediatric patients in 2001. Our results are similar to this last 2001 report. However, we are a referral center for pediatric patients who are not candidates for anesthesia care at our satellite surgical sites.

References


Pediatric Cardiology

Pediatric cardiologists at Cleveland Clinic’s Children’s Hospital perform catheterizations in children and adults with congenital heart disease. Diagnostic procedures are performed to obtain information that will help in the management of these patients. The majority of procedures performed are interventions, which are done for a variety of lesions that would have otherwise required heart surgery. These include atrial and ventricular septal defect closure, patent ductus arteriosus closure, closure of other abnormal connections, balloon dilation of stenotic valves, balloon dilation/stenting of arteries and veins, and myocardial biopsies.

A team of nurses, anesthesiologists and cardiologists that are specifically trained and dedicated to the care of children and adults with congenital heart disease provides an environment that ensures comfortable and safe care of all patients.

In 2007, 443 cardiac catheterizations were performed on pediatric and adult congenital heart patients.

2007 Pediatric Cardiac Catheterization Volume by Age

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 28 Days</td>
<td>0</td>
</tr>
<tr>
<td>&gt; 28 Days to 1 Year</td>
<td>100</td>
</tr>
<tr>
<td>&gt; 1 Year</td>
<td>200</td>
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</tbody>
</table>

2007 Pediatric Cardiac Catheterizations

<table>
<thead>
<tr>
<th>Catheterizations</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic</td>
<td>0</td>
</tr>
<tr>
<td>Therapeutic</td>
<td>300</td>
</tr>
<tr>
<td>Electrophysiology: RF Ablation</td>
<td>200</td>
</tr>
<tr>
<td>Electrophysiology: Diagnostic</td>
<td>100</td>
</tr>
</tbody>
</table>
From 2006 to 2007, there was a 29 percent decrease in pediatric cardiac catheterization procedural complications.

Minor complications were all vascular in nature and spontaneously resolved. Serious complications are defined as unplanned surgical intervention, vascular complication, cardiac arrest and death.
In 2007, 171 total surgeries were performed on pediatric and adult congenital heart patients.
The WeeFIM instrument, a pediatric version of the Functional Independence Measurement system, measures and tracks the development of functional independence. Typically, children at Cleveland Clinic Children’s Hospital, Shaker Campus achieved higher functional status than expected nationally for pediatric rehabilitation facilities.

The WeeFIM score at discharge is calculated from the discharge scores of the 18 WeeFIM measures. The WeeFIM score for each person is calculated and the median discharge WeeFIM score for all persons is reported. WeeFIM scores range from 18-126. The benchmark is an expected score based on our case mix and is calculated by Uniform Data Systems for Medical Rehabilitation.

The amount of functional improvement measured at discharge has been consistent with the amount expected for the type of children seen in the program.
The WeeFIM score change is calculated by subtracting the admission WeeFIM score (sum of all 18 items) from the discharge WeeFIM score (sum of all 18 items). A WeeFIM score change is calculated for each person and the median WeeFIM score change for all persons is reported.

The impairment onset date is subtracted from the rehabilitation admission date. The onset time is calculated for each person, and the median time from onset to admission for all persons is reported. A lower number of days is better than a higher one.
The rehabilitation length of stay is calculated by subtracting the admission date from the discharge date. If any program interruptions are recorded, these off-service days are subtracted from the total length of stay. The length of stay is calculated for each person, and the median length of stay for all persons is reported. In 2007, children treated in the rehabilitation program at Cleveland Clinic Children's Hospital, Shaker Campus were generally discharged earlier from the program while demonstrating expected improvement.

The length of stay efficiency rate is calculated by dividing the change in WeeFIM score from admission to discharge by the length of stay. The length of stay efficiency rate is calculated for each person, and the median value for all persons is reported. A higher rate is better than a lower one.
The functional quotient is a methodology of age-adjusting the data and comparing an observed rating vs. an age-expected rating of a child without a disability. A functional quotient score is calculated for each person and the median functional quotient score for all persons is reported. A higher score is better than a lower one.

The functional quotient score change is calculated by subtracting the admission functional quotient score from the discharge functional quotient score. A functional quotient score change is calculated for each person and the median functional quotient score change for all persons is reported.
Children treated at Shaker Campus gained more function per day than those with similar conditions in comparable programs elsewhere. Therapy unit efficiency rate is calculated by dividing the functional quotient score change by the total number of therapy units provided. A therapy unit efficiency rate is calculated for each person and the median therapy unit efficiency rate is reported for all persons.

The vast majority of the children discharged from the rehabilitation program at Shaker Campus were discharged to their home community. The community discharge rate is calculated by dividing the number of persons undergoing rehabilitation who are discharged to a community-based setting by the number of all persons undergoing rehabilitation.
Pediatric Nephrology

Power Dialysis Center

The Power Dialysis Center, in our fifth year of operation at the Children's Hospital, Shaker Campus, provides pediatric hemodialysis and peritoneal dialysis services to children and adolescents through 21 years of age. The interdisciplinary team, comprising nephrologists, a nephrology nurse practitioner, nephrology nurses, renal dietitians, a pediatric renal social worker, a recreation therapist, vascular surgeons, radiologists, transplant surgeons, and tutors, makes this department unique and helps in the care of pediatric patients from diagnosis of end-stage renal disease to transplant. We have also received special pediatric exception from Medicare for the type/quality of care provided by the dialysis center.

The National Kidney Foundation Kidney Disease Outcomes Quality Initiative (NKF K/DOQI) guidelines have been widely adopted in the United States. These guidelines and national benchmarks have been used for quality improvement initiatives to improve the outcomes of patients who develop end-stage kidney disease. A new initiative is to increase the rate of fistula use in the hemodialysis population.

The benchmarks are as follows:
- Urea Reduction Rate (URR) > 65%
- Hematocrit > 33%
- Fistula rate > 40%

Children's Hospital 2007 Fistula Rate

Children's Hospital dialysis unit has exceeded the NKF K/DOQI benchmarks in all measures for the last three years.
Urea reduction rates show the adequacy of the dialysis treatment. The Children’s Hospital Dialysis Unit consistently performs better than the national standards.

Anemia is a common problem with end-stage renal disease. With the use of medications and the minimization of blood draws, we can keep our patients’ hematocrits above or near the national guidelines.
Center for Autism

Aggressive Behavior

Aggressive behavior can be a problem for children with autism. Using a structured behavior plan to reduce this type of behavior can be successful. At Cleveland Clinic Children’s Hospital Center for Autism, 20 out of 29 behavior plans reduced aggressive behavior to less than one episode per day within 130 days (70 percent success rate). Most of these plans were successful within 40 days.

Aggression Behavior Data Review - Success Within 130 Days (29 Plans)

Overall, the Center for Autism had a 69 percent success rate for behavior modification plans within 130 days. Success is determined by an average daily demonstration rate of < 1 percent. Most plans took 40 days to achieve this goal.
Aggregate Behavior Data Review

The data indicate the average percentage of reduction across all active plans during the quarter. The baseline rate of 1063.9 occurrences per day is an average of all occurrences of behavior across all behavioral classifications. A decrease in the number of active behavior plans is indicated in the change of average baseline rate in summer 2007. The current rate is an average of all behavior occurrences during the quarter.

Mean Reduction of Challenging Behavior

As enrollment at Cleveland Clinic's Center for Autism has increased, the percentage of children able to return to their home districts or less specialized educational placements following service at the school has increased to 9 percent.
Pediatric Behavioral Health

Pediatric Feeding Disorders Program

The Pediatric Feeding Disorders Program at Cleveland Clinic Children's Hospital, Shaker Campus treats children 0-3 years of age, including children born prematurely and those who self-restrict their diets. Our goal is to increase acceptance of food variety among children who severely self-restrict their diets to the point that physical life and health are compromised. In these patients, the goal is to increase the number of foods accepted and to increase acceptance of foods from a greater number of food groups (i.e., fruit, vegetables, meat/protein).

After an initial interdisciplinary evaluation that included a developmental pediatrician, the child is seen in outpatient therapy using an interdisciplinary treatment approach with Psychology, Occupational Therapy, Speech/Language Therapy and Nutrition.

Self-Restrictors: Treatment Outcome for Food Selectivity

Pre-treatment

Post-treatment

Significant increases in the number of foods accepted were recorded in children who previously severely restricted their intake.
Significant improvement was noted in acceptance of increased number of food groups.
Following treatment, there was a significant reduction in the number of former premies who met criteria for failure-to-thrive.

Following treatment, a substantial number of children significantly reduced their dependency on calories provided through nasogastric/gastrostomy tube supplementation.
Significant improvement was noted in the number of children who had severely restricted their diets regarding adequate fluid volumes and who were at risk of nutritional deficiency.
Self-Restrictors: Mealtime Behavior Outcomes/Avoidant Behavior at Mealtimes

Self-restrictors demonstrated decreased resistant and refusal behavior at mealtimes.

Former Preemies: Mealtime Behavior (N=61) Avoidant Behavior at Mealtimes/Number of Behavioral Incidences Pre/Post

Former preemies exhibited decreased severity of avoidant behavior at mealtimes.
Summer Treatment Program (STP) for Children with Attention-Deficit Hyperactivity Disorder

Cleveland Clinic Children’s Hospital offers the comprehensive Summer Treatment Program (STP), a seven-week program designed for children ages 6-14 years of age.

Children receive daily social skills training from their counselors, learn sports skills to help them be more successful with peers, and practice classroom survival skills in an academic environment. Parent training and medication assessments are also provided. The program divides participants into small groups based on age. Each group is supervised by five clinical staff members. Groups remain together throughout the day, allowing children to function within a small social network.

Participants spend two hours each day in a classroom setting as they learn to manage behavior in a school environment. The remainder of the day features such group activities as swimming, soccer, baseball and basketball. During recreational periods, children are involved in group problem-solving, social skills training and other forms of treatment and education.

Children in the program participate in a “point system” in which they earn points for nine positive target behaviors and lose points for 13 negative behaviors. Parents also benefit from the STP in the form of weekly parent training, where they learn to effectively manage their children’s behavior at home and at school. In addition, the program evaluates the individual effectiveness of ADHD medications on children, facilitates clinical research, and offers monthly “booster sessions” throughout the school year to maintain and reinforce positive behavior change.

**Average Positive Peer Behaviors**

Frequency of positive peer interactions consistently increased from baseline to endpoint.

**Average Total Points Earned**

Frequency of total positive target behaviors (represented by point totals assigned to each behavior) increased from baseline to endpoint.
Pediatric Pain Rehabilitation Program

The Pediatric Pain Rehabilitation Program at Cleveland Clinic Children’s Hospital, Shaker Campus is a unique and innovative program designed for children and adolescents with chronic pain that interferes with normal activities. As a result of their pain, these children may not attend school, interact with peers, or participate in normal activities. Our program focuses on helping children to manage their pain and to restore daily activity. It consists of inpatient and outpatient components and blends pediatric subspecialty care, behavioral health, and rehabilitation therapies in an individualized but coordinated manner. Preliminary outcomes for a sample of patients with an average two-and-a-half-year history of pain demonstrate a 45 percent improvement in pain severity, 46 percent improvement in physical functioning, and improvements in social functioning and pain-specific anxiety.

Impact on Pain Severity (0-10 Pain Scale)

Lower pain severity scores are desired. A 36 percent improvement in pain severity at post-treatment (32 percent at one-month follow-up) was observed.

Impact on Physical Functioning

A 50 percent improvement in physical functioning at post-treatment (59 percent at one-month follow-up) was observed.
Impact on Social Functioning and Pain-Specific Anxiety

Impact of treatment on social functioning and anxiety post-treatment: 20 percent improvement in social functioning at post-treatment (46 percent at follow-up) and 37 percent improvement in pain-specific anxiety at post-treatment (50 percent at follow-up).
The Pediatric Intensive Care Unit staff has made the reduction of catheter-associated blood stream infections a priority. We have initiated a number of procedures, including full sterile gowning and wide-field sterile drapes, to address this goal. Our daily line care procedures have been rigorously reviewed and standardized. In 2007, we reduced our catheter-associated blood stream infection rate by more than 50 percent and have achieved a rate lower than the 2006 National Healthcare Safety Network (NHSN) benchmark acceptable rate.

Reference

CLABSI: Central Line Associated Bloodstream Infection
Rate = # Central line associated bloodstream infections / patient days X 1000
NHSN Rate was derived from Edwards et al., 2007 report by taking # central line associated bloodstream infections / patient days X 1000 from the reporting PICU’s, page 292 table 2
Critical Care Transport

In its third year of operation, the Pediatric Transport Team remains vital to the growth of Children’s Hospital, providing services to an expanding population in Cleveland and the surrounding areas. Overall trips increased by 12.3 percent from 2006. There were no mortalities en route.
The Fetal Care Center

The Fetal Care Center is led by co-directors John DiFiore, MD (Pediatric Surgery), Jeffrey Chapa, MD (Maternal-Fetal Medicine), and Sabine Iben, MD (Neonatology). Donna Patno, RN, CNM, DNP, serves as Fetal Nurse Coordinator. The Center provides consultation and management for fetal medical and surgical disorders, and continuity of care for expectant mothers and their newborns, in collaboration with their obstetricians and community pediatricians.

In 2007, 75 patients were seen through the Fetal Care Center, a 27 percent increase over 2006, including 29 referrals from non-Cleveland Clinic facilities. This led to a 30 percent increase in associated specialty prenatal consultations, with 164 prenatal consultations in 2007 compared to 126 in 2006. The Fetal Care Center performed 37 fetal MRI studies in 2007.

A broad range of specialties provided prenatal consultation, including: Pediatric Surgery, Neonatology, Pediatric Urology, Pediatric Otolaryngology, Pediatric Radiology, Pediatric Neurology and Neurosurgery, Pediatric Plastic Surgery, Pediatric Gastroenterology, Pediatric Cardiology, Pediatric Cardiothoracic Surgery, Pediatric Palliative Care, Spine Service, Pain Management, Hematology/Oncology, Bioethics and Pediatric Anesthesia.

Prenatal family education and support consultations were extensive, time being spent with families based on the individual family’s needs. Patients were local, regional, national and international. Patients included those with normal conception, a history of infertility, in vitro fertilization (IVF) pregnancies, and infertility patients with spontaneous conception.

Sixteen Cesarean deliveries were scheduled. Eight were performed at Cleveland Clinic’s main campus and eight mothers were delivered elsewhere due to maternal/fetal emergency. All these newborn babies were safely transferred to main campus for surgical intervention. Maternal conditions requiring collaborative support from the fetal care team included an unrepaired maternal coarctation of the aorta, which required stenting and surgical repair of a maternal aortic dissection at 37 weeks gestation.

The Fetal Care Center provided Children's Hospital intensive care units (NICU and PICU) with 23 new admissions. These primary admissions generated 680 patient ICU days, an increase of 26 percent from 2006.

The number of newborn surgical procedures through the Fetal Care Center nearly doubled in 2007, increasing to 57 from 30 in 2006.

The Fetal Care Center undertook its first patient satisfaction survey in 2007.

- 100 percent of respondents described their care as “exceptionally thorough.”
- 100 percent felt they were shown “outstanding respect and personal caring” from our Fetal Care Center providers.
- 100 percent would “highly recommend” the Fetal Care Center.
- 100 percent indicated they would refer their friends and family members to the Fetal Care Center.

Fetal Care Center Statistics

![Graph showing comparison of fetal care statistics between 2006 and 2007](image-url)
Pediatric Gastroenterology

Pediatric Ambulatory Endoscopy

Between June and December 2007, 240 pediatric patients greater than 6 years of age underwent upper endoscopy and/or colonoscopy in the Pediatric Ambulatory Endoscopy Unit. All procedures were performed under general anesthesia, administered by a pediatric anesthesiologist. Patient records were reviewed to identify adverse events that occurred during the procedures, including hemodynamic instability, medication reactions, gastrointestinal bleeding and unanticipated admission of patients to the hospital secondary to procedure complications. No adverse reactions were identified. In addition, patient medical records were reviewed to identify post-procedure complications, self-reported by the patient within seven days of their procedure. In our patients, post-procedure symptoms were reported in 16 patients (7 percent), and included abdominal pain, chest pain, cough, dysphagia and fever.

Remicade™ Administration Safety Monitoring

In 2007, 848 outpatient infliximab infusions were administered to children and adolescents with Crohn's disease (138 patients), and ulcerative colitis (16 patients). All patients were monitored during their infusion for immediate infusion reactions, defined as shortness of breath, facial flushing, fever, rash and decrease in blood pressure (> 20 mmHg from baseline). Infusion reactions occurred in seven patients. The percentage of infusion reactions in our patients is consistent with published infliximab reaction rates in pediatric patients with inflammatory bowel disease. Medical records of patients with infusion reactions were reviewed, confirming documentation of nursing and physician assessment at the time of the reaction, appropriate intervention and resolution of symptoms. No adverse outcomes, defined as inability to maintain adequate airway, hemodynamic instability, call to pediatric medical emergency response team or hospital admission, were reported.


Pediatric Wireless Capsule Endoscopy

Wireless capsule endoscopy is a new technology utilized to more specifically identify small intestinal abnormalities. This procedure has been performed in children for the evaluation of symptoms including abdominal pain and gastrointestinal bleeding; in the detection of small bowel vascular and mucosal abnormalities; and to identify and confirm the presence and extent of small bowel inflammation in patients with Crohn’s disease. Wireless capsule endoscopies were performed in 236 pediatric gastroenterology patients from 2002-2007 (ages 3-23 years). Capsule endoscopy results were retrospectively reviewed. Indications for wireless endoscopy in these patients included abdominal pain, diarrhea, gastrointestinal bleeding, inflammatory bowel disease, protein-losing enteropathy and polyposis syndromes. In this group of patients, 9 percent of the wireless capsules were deployed at the time of upper endoscopy in those patients who were judged unable to swallow the capsule. In 91 percent of patients, the capsules were swallowed. Review of these studies found that 82 percent of studies were complete to the cecum. Positive findings were identified in 81 patients (34 percent of patients) examined. Findings included small bowel Crohn’s disease in 61 patients, polyps in six patients, vascular lesions in four patients and isolated erosion in four patients. Capsule retention occurred in four patients (1.7 percent). Our retention rate compares favorably to published capsule retention rates in children of 5-10 percent. Capsule retention, in our patients, occurred most commonly in patients with Crohn’s disease.
General Pediatrics

Main Campus

We promote vaccinations and review immunization status at all patient visits, including well-child care appointments, as well as sick and follow-up visits. Current vaccination recommendations include: four DTaP/DT vaccinations, three OPV/IPV vaccinations, one MMR vaccination, three Hib vaccinations, three Hepatitis B vaccinations, one varicella vaccination, and four pneumococcal conjugate vaccinations.

2007 Childhood Immunization Status Combination III: Percentage of Two-Year-Olds with Current Recommended Vaccinations

A measure of practice quality is the appropriate use of antibiotics. Antibiotic use for viral infections leads to antibiotic resistance in the community.

2007 Appropriate Testing for Children with Pharyngitis: Percentage of patients 2-18 years at the time of visit with a diagnosis of pharyngitis who were prescribed antibiotics and had a Group A Strep Test

Our practice makes certain that each child prescribed antibiotics for pharyngitis is tested for Group A Strep infection prior to prescribing the medication. Currently, we are achieving a rate of Streptococcus testing of 98 percent or higher in children with pharyngitis, surpassing national benchmarks and best practice guidelines.
2007 Appropriate Treatment for Children with Upper Respiratory Infection (URI): Percentage of patients 3 months-18 years at the time of visit with a diagnosis of URI who were not prescribed antibiotics

- **Percent**
  - 100
  - 80
  - 60
  - 40
  - 20
  - 0

- **Benchmark: Commercial Payors**
  - 1st Quarter: n=54
  - 2nd Quarter: n=73
  - 3rd Quarter: n=80

- **Benchmark: Medicaid**
  - 100

- **Children's Hospital**
  - 100

Graph showing the percentage of patients who were not prescribed antibiotics for URI over three quarters.
Center for Pediatric Hospital Medicine

An increasing number of referring physicians and subspecialists are appreciating the benefits of entrusting the care of their patients to the pediatric hospitalists within Cleveland Clinic Children's Hospital. In 2007, pediatric hospitalists increased their scope of practice to include care of surgical patients. Both of the above are reflected in increased admissions and patient days.

**Pediatric Hospitalist Service: Admissions**

**Pediatric Hospitalist Service: Patient Days**
Regional Pediatrics
Vaccine-preventable diseases are at an all-time low in the United States, in large part due to the efforts of pediatricians and the effectiveness of childhood immunizations. Immunizations are being given to children regularly, beginning at birth and continuing through the teen years. Our goal is for all children to be adequately immunized against diphtheria, polio, tetanus, pneumococcal meningitis, hemophilus meningitis, measles, mumps, rubella and chicken pox. We are making great progress toward accomplishing this.

Cleveland Clinic Regional Pediatrics: Recommended Childhood Immunizations, Current

While the utility of antibiotics is unquestioned, inappropriate use can lead to bacterial resistance, making infections more difficult to treat. Antibiotic use is declining among physicians because of increasingly appropriate utilization and our pediatricians are leading the way. Antibiotics are of no benefit for viral upper respiratory infections, and our pediatricians are appropriately not prescribing them in those situations.
In addition, antibiotics are of no benefit for the vast majority of children with sore throats, but are necessary for the treatment of Strep throat. Our pediatricians ensure an accurate diagnosis of Strep prior to starting antibiotics.

The medical home is a very important part of the care of kids. This is defined by the American Academy of Pediatrics as accessible, continuous, comprehensive, family-centered, coordinated, compassionate, and culturally effective care. Our pediatricians are available in the office seven days a week, including evening hours most days. Our pediatricians collaborate between offices to ensure high-quality care, and our electronic medical record helps ensure appropriate communication between our offices and also our in-system emergency care facilities.
Pediatric Urgent Care

Members of the Department of General Pediatrics provide urgent care services in Cleveland Clinic's main campus Emergency Department. They are able to access the full complement of medical and surgical pediatric subspecialists needed to provide for the acute care needs of children through 18 years of age.

Pediatric Urgent Care Visits 2007

![Graph showing Pediatric Urgent Care Visits 2007](image_url)
Pediatric Surgery Department surgical volumes at Main Campus increased 6 percent from 2006. Pediatric surgery volumes at Fairview Hospital have also been growing. We now offer consultation clinics at both Hillcrest and Fairview Hospitals.

In 2007, pectus excavatum bar insertions and removals increased from 2006. There was a slight decrease in pectus carinatum cases.
Severity of Illness

The APR-DRGs use clinical logic to classify patients into similar severity-of-illness and risk-of-mortality groupings. Comparisons can then be made in terms of length of stay, cost, mortality and severity of illness.

Criteria:
All patients ≤ 18 years of age
Time Frame: 2007 Discharges

<table>
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<tr>
<th>APR DRG</th>
<th>APR-DRG Description</th>
<th>#Cases</th>
<th>Children's Hospital ALOS</th>
<th>Target LOS</th>
<th># Deaths</th>
<th>Expected Deaths</th>
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<td>120</td>
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<td>Other Stomach, Esophageal &amp; Duodenal Procedures</td>
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<td>2.60</td>
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<td>223</td>
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<td>5.98</td>
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<td>0.00</td>
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<td>228</td>
<td>Inguinal, Femoral &amp; Umbilical Hernia Procedures</td>
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<td>229</td>
<td>Other Digestive System &amp; Abdominal Procedures</td>
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<td>650</td>
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The overall mean National Healthcare Safety Network (NHSN) central-line-associated blood stream infection rate is derived by combining all birth weights and infection data from CLAB and UCAB infections in Level 3 NICUs (Edwards et al., 2007, pages 294-295 tables 5, 6). The end rate equals a total mean for all patients from reporting facilities.

Reference


CLAB: Central-Line-Associated Blood Stream Infection

UCAB: Umbilical-Catheter-Associated Blood Stream Infection

CLABSI: Central-Line-Associated Blood Stream Infection

NHSN: National Healthcare Safety Network

Central Line Associated Blood Stream Infection Rate = # Central Line Associated Bloodstream Infections / Central Line Days X 1000
Pediatric Headache (N=18)

Pediatric patients treated for headache showed an improvement in PedsMIDAS (Migraine Disability Assessment Score), headache frequency, and number of rescue medications needed. The number of school days missed is one of the questions included in the PedsMIDAS interview. N=18 pediatric patients with two PedsMIDAS scores on average of three months apart.

Pediatric EMG

There are very few medical centers in the country that provide high-quality electromyography (EMG) for the pediatric population with the option of EMG under sedation, resulting in a more comprehensive examination and less discomfort for the patient.
Pediatric Neurometabolic Clinic

The term idiopathic developmental delay is used to define some 3 percent of the population that has unexplained neurologic and developmental symptoms including autism and epilepsy. Until very recently, this population of children and adults, some with progression of their symptoms for unexplained reasons, remained largely without a diagnosis. With advances in technology and improving diagnostic skills, the ability to reach a conclusive diagnosis in this population has steadily improved. While there is no national standard, tertiary care centers such as ours have the potential to reach a diagnosis 30-50 percent of the time (van Karnebeek et al., 2005).


**Neurometabolic Clinic Diagnostic Yield**

In 2007 our Neurometabolic Clinic evaluated over 300 patients presenting with unexplained neurologic and/or developmental symptoms, and we were able to establish a diagnosis in 125 patients, or 40 percent.
Per protocol, we provide the influenza vaccine to children who currently receive chemotherapy, have been off chemotherapy less than six months, and have sickle cell disease.

We implemented a process to capture as many patients as possible by:

- maintaining a list of all patients needing and receiving vaccine.
- mailing reminder letters to all eligible patients.
- providing reminder phone calls prior to their appointment.
- providing follow-up flu shot appointments for patients who were ill at the time of their initial visit.

(Children may not receive the vaccine due to medical therapies, may receive the vaccine from another care provider, or parents may decline administration.)
The Children’s Hospital has been collecting data on bloodstream infections in our intensive care units for several years.

- Neonatal Intensive Care Unit mean infection rate has declined from 8.86 to 1.41/1000 patient days
- Pediatric Intensive Care Unit mean infection rate has declined from 5.74 to 1.2/1000 patient days.

- Interventions used to decrease bloodstream infections included:
  - increased hand hygiene compliance
  - adherence to evidence-based insertion techniques

- In 2008 we will be joining the National Association of Children’s Hospitals and Related Institutions (NACHRI) Catheter Associated Blood Stream Infection Collaborative to learn more about processes and techniques that will help us further decrease our rates.
Unplanned Extubations in the Pediatric Intensive Care Unit
PICU Unplanned Extubation Rates 2007

The Children’s Hospital tracks unplanned extubation rates as well as contributing factors such as level of sedation, duration of intubation and RN:patient ratios. The Pediatric Intensive Care Unit mean rate for 2007 is 0.65/100 patient days. Factors thought to positively affect our outcomes are 24-hour pediatric intensivist staff and 1:1 nurse-patient ratio when indicated.

NICU Unplanned Extubations

The Neonatal Intensive Care Unit mean unplanned extubation rate for 2007 is 1.20/100 patient days. Interventions implemented to decrease unplanned extubations include trialing new ways to secure endotracheal tubes and having two caregivers participate in repositioning intubated babies.
Pediatric Hematology/Oncology

In 2007, the Pediatric Hematology/Oncology Department diagnosed 85 new pediatric cases of cancer. The leading diagnosis was low-grade brain tumors.

2007 New Patient Visits by Diagnosis

Inpatient admissions increased by 37 percent, compared to 2006. This led to an increase in patient days, while our length of stay decreased from 4.5 in 2006 to 3.6 in 2007.

2007 Pediatric Hematology/Oncology Patient Days and Length of Stay
Procedural Complications

Bone marrow aspirations, bone marrow biopsies and lumbar punctures are performed on children for the diagnosis of leukemia and solid tumors, as well as to monitor ongoing chemotherapy. Lumbar punctures are performed to assess the possibility of central nervous system spread of leukemia and solid tumors, and as prophylaxis against the spread of malignancies. Rates of bleeding or infection at bone marrow aspiration and biopsy sites and the rate of post-lumbar puncture headache have been decreasing each year since monitoring began.

The most common complications seen for the procedures were spinal headaches and multiple attempts to get the spinal fluid or bone marrows on very large or small patients.
Pediatric Transplant

Liver Transplantation

Since 2003, there have been 13 primary liver transplants in pediatric patients (12 liver; one liver/pancreas) at Children’s Hospital. In 2007, the median number of days on the waiting list, for deceased donor types, was 93 days. The median length of stay for pediatric liver transplant patients, post-transplant, for 2007 was 22 days.

The Scientific Registry of Transplant Recipients (SRTR) supports the ongoing evaluation of the scientific and clinical status of solid organ transplantation in the United States. The U.S. organ transplantation system employs evidence-based allocation policy development through collaborative efforts between the transplant community, the SRTR, and the Organ Procurement and Transplantation Network (OPTN). The SRTR plays a critical role in policy development through ongoing development of statistical, analytic, and simulation models responsive to policy goals.

Liver Transplant Patient vs. Graft Survival

![Graph showing survival analysis for liver transplant patients and graft survival rates from 2003 to 2007, with comparison to SRTR benchmarks.]
**Pediatric Liver Transplants for 2007 by Donor Type**

Number Liver Transplants by Donor Type

- Deceased
- Living Related
- Living Unrelated

**2007 Pediatric Liver Transplants by Type**

Liver Transplants by Type

- Partial
- Spit
- Whole
- Reduced Liver (lateral segment)
**Kidney Transplantation**

Since 2003, there have been 25 primary kidney transplants in pediatric patients at the Children's Hospital. In 2007, the median numbers of days on the waiting list, for deceased donor types, was 139 days. The median length of stay for pediatric kidney transplant patients, post-transplant, for 2007 was eight days.

**Survival Analysis (2003–2007)**

Renal Transplant Patient vs. Graft Survival

![Survival Analysis Graph](image)

**Transplant Donor Types**

![Transplant Donor Types](image)
Patient Experience

Outpatient Pediatric Institute & Children’s Hospital

We ask our patients about their experiences and satisfaction with the services provided by our staff. Although our patients are already indicating we provide excellent care, we are committed to continuous improvement.

Overall Rating of Care 2007

![Overall Rating of Care 2007 Chart]

Overall Rating of Provider Care 2007

![Overall Rating of Provider Care 2007 Chart]

Would Recommend Provider 2007

![Would Recommend Provider 2007 Chart]
Inpatient

Overall Rating of Care 2007
(0 worst - 10 best scale)
January - December 2007

Would Recommend Facility 2007
January - December 2007
Innovations

Department Highlights

In the Center for Pediatric Infectious Diseases, Lara Danziger-Isakov, MD, MPH, an NIH-funded researcher, is studying infections in children after solid organ transplants and heads a multi-center consortium of pediatric lung transplant researchers.

The Center for Pediatric and Congenital Heart Diseases has expanded its pediatric cardiology services to Medina, Hillcrest and Fairview hospitals, creating increased fetal echocardiography services to perinatologists and obstetricians. The Department also participated in 36 research projects, including studies of techniques and devices to treat heart defects in children, infants and babies in the womb, tracking long-term heart surgery and transplant outcomes and studying safer, more effective heart imaging in children. Pediatric cardiothoracic surgeon Muhammad Mumtaz, MD, and pediatric cardiologist Gerard Boyle, MD, partnered to successfully perform a heart transplant on a less-than-5-pound premature infant with coronary heart disease.

The Department of Pediatric Gastroenterology opened the Children's Hospital Pediatric Endoscopy Suite, featuring two dedicated endoscopy rooms with state-of-the-art, high-definition endoscopic and anesthesia equipment, and four intake/recovery rooms. The Department developed an Integrative Abdominal Pain Clinic, where children receive care from pediatric gastroenterologists and specialists in behavioral medicine and nutrition and have access to complementary and alternative therapies. Pediatric gastroenterologist Ariel Feldstein, MD, and his team have made significant contributions to better understanding Nonalcoholic Fatty Liver Disease, also known as NAFLD. The latest Cleveland Clinic discovery on NAFLD was recently published in the journal Hepatology. By studying liver cells in culture as well as the livers of both obese and lean mice, Cleveland Clinic researchers discovered key points about how NAFLD occurs.

The Department of Pediatric Anesthesia managed anesthesia for more than 6,729 cases, including 523 pediatric heart surgeries, through a staff of 14 pediatric anesthesiologists. The department partnered with Child Life and Social Work to create a video that addresses families' questions and concerns about anesthesia. It is available to the public through the Internet. The Department applied a special imaging technique, infrared spectroscopy, to document improvements in adolescents undergoing scoliosis correction and infants undergoing skull remodeling.

The Department of Pediatric Rheumatology expanded its services to five locations with the addition of a second staff member, and has expanded its expertise in pediatric vasculitis and juvenile inflammatory arthritis. The Department spearheaded two NIH studies, one for an aggressive therapy for newly diagnosed arthritis affecting many joints (polyarticular arthritis) that involves offering joint injections under sedation in the operating room, and the other comparing psychological interventions for children suffering from fibromyalgia, collaborating with pediatric behavioral health specialists on a new hospital-based Pain Rehabilitation Program.

The Department of Pediatric Urology added a second pediatric urologist, expanding its expertise in minimally invasive techniques. The Department established a Center for Pediatric and Adolescent Bladder Control, and conducted research on urinary tract stones and congenital urinary tract obstruction in children.

The Department of Neonatology continues to transition the Hillcrest Hospital Level II NICU to Level III, which is expected to open in early 2010. In 2007, the Fetal Care Center evaluated more than 170 pregnant women with antenally diagnosed fetal anomalies and provided multidisciplinary counseling for those families.

In the Department of General Pediatrics, the Section of Adolescent Medicine's Pediatric Obesity Prevention and Treatment Initiative has served more than 90 area children in Independence, with a cumulative weight loss of 297 pounds.

General Pediatrics expanded to include the Department of Regional Pediatrics which features general pediatricians at the Avon Pointe, Beachwood, Independence, Lakewood, Solon, Strongsville and Willoughby Hills Family Health Centers. The regional pediatric staff delivered more than 90 educational programs within Cleveland Clinic’s Lerner College of Medicine. In addition, the regional staff provided clinical and educational instruction to 40 residents and more than 100 medical students in 2007.

The Department of Pediatric Surgery has expanded to four full-time pediatric minimally invasive surgeons. The Department provides 24/7 full-service coverage to Fairview General Hospital and the main campus. The Chair of Pediatric General Surgery, David Magnuson, MD, was the first to perform a thoracoscopic neonatal diaphragmatic hernia repair at Cleveland Clinic, and the first in Ohio to perform a laparoscopic neonatal duodenal atresia repair.
The Department of Critical Care Medicine decreased catheter-associated blood stream infections by 50 percent, and did not have a single episode of ventilator-associated pneumonia or nosocomial viral infection in the Pediatric Intensive Care Unit.

The Department of Pediatric Neurology established a Pediatric Multiple Sclerosis and White Matter Disorders Program to treat children with rare, inherited neuromuscular conditions. In addition, the Department welcomed pediatric sleep medicine specialist Jyoti Krishna, MD, as head of the Sleep Disorders Program.

A Family Affair in the Neonatal Intensive Care Unit

Families of critically ill infants want to spend as much time as possible at the baby’s bedside. Many families travel long distances to visit, so Neonatal Intensive Care Unit (NICU) nurses created a new opportunity for family instruction.

“Video on Demand” is an online resource that allows family members in the NICU to view educational videos right from their baby’s bedside computer. Nurses can download educational videos important for family members’ education.

Disposable earphones are used to decrease ambient noise in the unit. In addition, this educational venue provides nurses the ability for immediate follow-up regarding family member understanding of instructions and facilitates questions by family members about their baby’s progress and care.
Family-Centered Rounds

The American Academy of Pediatrics recommends that staff physician rounding should take place in the patients' rooms and family participation should be standard practice. Input from the healthcare team and the parents is equally important, with the focus being on the child. The National Patient Safety Goals direct many practices to maximize patient safety, including involving patients and families. Communication is a critical element to safe care. Pediatric Hospital Medicine Programs are uniquely positioned to utilize family-centered rounds to optimize the safety of hospitalized children.

Here’s what one Cleveland Clinic Children's Hospital parent said about Family-Centered Rounds: “It was so refreshing to be included in the discussion, debate and direction of the course of my child's care. For once, I understood what went on ‘in the halls of silence,’ which used to be the method of rounding done in the past. Now the discussion takes place in the room, corrections to the misinformation or misinterpretations can be made, and most importantly, the family understands the why and how of the treatment course because they are fully engaged in the discussion, the differential diagnoses, and hopefully the final diagnosis and treatment plan. I loved being included in this program! I hope all families are encouraged to participate.”
New Knowledge

Journal Articles


Frazier TW, Youngstrom EA. Historical increase in the number of factors measured by commercial tests of cognitive ability: Are we overfactoring? *Intelligence*. 2007 Mar;35(2):169-182.


Pellett PE, Goldberg J. Multilane highway to congenital infection. J Infect Dis. 2007 Nov 1;196(9):1276-1278.


Whole Books

**Book Chapters**


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Pediatric Endocrinology
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Steven Toms, MD, MPH

**Pediatric Ophthalmology**

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Director, Center for Genetic Eye Diseases  
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Raj Rambhlata, MD
Dana Schmidt, MD
John H. Strong, MD

Some physicians may practice in multiple locations. For a detailed list including staff photos, please visit clevelandclinic.org/staff
Contact Information

General Patient Referral
24/7 hospital transfers/admissions/critical care transport

Additional Contact Information
Main Campus
216.444.8302 or 800.553.5056

Cleveland Clinic Children’s Hospital for Rehabilitation at Shaker Campus
216.448.6400 or 800.635.2417

Outpatient Appointments/Referrals
Medical and Surgical Subspecialties - Main Campus
216.444.KIDS (5437) or 800.553.5056

Cleveland Clinic Children’s Hospital for Rehabilitation at Shaker Campus

Outpatient Medical Clinic Appointments/Referrals
216.448.6179

Center for Autism
216.448.6440

Feeding Disorders Program
216.448.6024

OT/PT/SLT and Motor Control Programs
For new patients 216.636.5437
For existing patients 216.448.6171

Dialysis
216.448.6193

To find a pediatrician at a Cleveland Clinic Family Health Center near you, visit clevelandclinic.org/fhc

General Information
216.444.2200

Hospital Patient Information
216.444.2000

Patient Appointments
216.444.2273 or 800.223.2273

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

International Center
Complimentary assistance for international patients and families
800.884.9551 or 001.631.439.1578 or visit clevelandclinic.org/ic

Cleveland Clinic in Florida
866.293.7866

For address corrections or changes, please call 800.890.2467
clevelandclinic.org
Institute Locations

On the Web at clevelandclinic.org/childrenshospital

Main Campus
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Cleveland, OH 44195
216.444.GENP (4367)

Lakewood Family Health Center
16215 Madison Ave.
Lakewood, OH 44107
216.521.4400

Shaker Campus
2801 Martin Luther King Drive
Cleveland, OH 44104
216.636.KIDS (5437)

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

Avon Family Health Center
36901 American Way
Avon, OH 44011
440.899.5550

Solon Family Health Center
29800 Bainbridge Road
Solon, OH 44139
440.519.6800

Beachwood Family Health and Surgery Center
26900 Cedar Road
Beachwood, OH 44122
216.839.3000

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

Brunswick Family Health Center
3574 Center Road (Route 303)
Brunswick, OH 44212
330.225.8886

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

Elyria at Chestnut Commons Family Health Center
303 Chestnut Commons Drive
Elyria, OH 44035
440.366.9444

Cleveland Clinic Wooster
1739 Cleveland Road
Wooster, OH 44691
330.287.4500

Independence Family Health Center
5001 Rockside Road
Crown Center II
Independence, OH 44131
216.986.4000
Cleveland Clinic Overview

Cleveland Clinic, founded in 1921, is a nonprofit multispecialty academic medical center that integrates clinical and hospital care with research and education. Today, 1,800 Cleveland Clinic physicians and scientists practice in 120 medical specialties and subspecialties, annually recording more than 3 million patient visits and more than 70,000 surgeries.

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 onto the patient. From access and communication to point-of-care service, institutes will improve the patient experience at Cleveland Clinic.

Cleveland Clinic’s main campus, with 37 buildings on 140 acres in Cleveland, Ohio, includes a 1,000-bed hospital, outpatient clinic, specialty institutes and supporting labs and facilities. Cleveland Clinic also operates 14 family health centers; eight community hospitals; two affiliate hospitals; a 150-bed hospital and clinic in Weston, Fla.; and health and wellness centers in Palm Beach, Fla., and Toronto, Canada. Cleveland Clinic Abu Dhabi (United Arab Emirates), a multispecialty care hospital and clinic, is scheduled to open in 2011.

At the Cleveland Clinic Lerner Research Institute, hundreds of principal investigators, project scientists, research associates and postdoctoral fellows are involved in laboratory-based research. Total annual research expenditures exceed $150 million from federal agencies, non-federal societies and associations, and endowment funds. In an effort to bring research from bench to bedside, Cleveland Clinic physicians are involved in more than 2,400 clinical studies at any given time.

In September 2004, Cleveland Clinic Lerner College of Medicine of Case Western Reserve University opened and will graduate its first 32 students as physician-scientists in 2009.

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, visit clevelandclinic.org.

Online Services

eCleveland Clinic

eCleveland Clinic uses state-of-the-art digital information systems to offer several services, including remote second medical opinions to patients around the world; personalized medical record access for patients; patient treatment progress for referring physicians (see below); and imaging interpretations by our subspecialty trained radiologists. For more information, please visit eclevelandclinic.org.

DrConnect

Online Access to Your Patient’s Treatment Progress

Whether you are referring from near or far, DrConnect can streamline communication from Cleveland Clinic physicians to your office. This online tool offers you secure access to your patient’s treatment progress at Cleveland Clinic. With one-click convenience, you can track your patient’s care using the secure DrConnect website. To establish a DrConnect account, visit eclevelandclinic.org or email drconnect@ccf.org.

MyConsult

Remote Second Medical Opinion is a secure online service providing specialist consultations and remote second opinions for more than 600 life-threatening and life-altering diagnoses. The MyConsult service is particularly valuable for people who wish to avoid the time and expense of travel. For more information, visit eclevelandclinic.org/myconsult, email eclevelandclinic@ccf.org or call 800.223.2273, ext 43223.

For more information about Cleveland Clinic, visit clevelandclinic.org.
Cleveland Clinic

9500 Euclid Avenue, Cleveland, OH, 44195

Cleveland Clinic is a nonprofit multispecialty academic medical center. Founded in 1921, it is dedicated to providing quality specialized care and includes an outpatient clinic, a hospital with more than 1,000 staffed beds, an education institute and a research institute.

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