Cleveland Clinic visionaries have changed the face of medicine. Where others saw obstacles, we saw opportunities. Where others saw impossibility, we saw the chance to make medical history.

Visionary breakthroughs have marked every stage of Cleveland Clinic’s development, from our founding as one of the nation’s first nonprofit group practices to performing the first coronary artery bypass and discovering the first prostate cancer virus.

At Cleveland Clinic, we continue to hone our vision for the future. Over the past year, leadership teams have collaborated in planning how we can best serve our many stakeholders — patients, donors, employees, community members — in years to come. Their efforts have resulted in a comprehensive roadmap for the next decade and beyond.

Combining enterprise goals and strategic targets, our plan for the future plots the use of Cleveland Clinic’s resources to ensure that we continue to innovate, educate, discover and, most important, put patients first in all we do.
We believe that the solutions begin with transparency and open communication.

Locally, our greatest challenge is demographic. Cleveland Clinic has a greater than 50 percent share of the market in Cuyahoga County and the seven surrounding counties, and that share is increasing. Most of our patients, however, come from Cuyahoga County, where nearly all of our facilities are located and where the population is steadily decreasing. Between 2000 and 2020, the county’s population is expected to drop 6 percent. By contrast, the population outside Cuyahoga County is growing, particularly in the southwestern suburbs. These facts will affect the distribution of our services and the sites of new facilities. We need to go where the patients are.

Changing demographics are reflected in Northeast Ohio by the amount of uncompensated care we provide. This has increased by more than 70 percent over the past 10 years. Our community benefit grew to $390 million in 2006, and now exceeds our operating income.

By every measure, Cleveland Clinic has grown very large very quickly. Our strategic plan will help us cope with some aspects of this growth. But a strategy cannot define who we are, how we work and why we are here. That is the function of culture. Cleveland Clinic is a physician-led model of partnership, where employees act as a unit for the benefit of the patient. That is the core of our culture. And our culture is something precious that needs to be cultivated and maintained as we move forward.

If we can continue to “act as a unit,” we can thrive academically, clinically and financially. This generation has the opportunity to redesign how healthcare is delivered, not only at Cleveland Clinic, but nationally and globally. And the best thing anyone can ask for in life is an opportunity.

We are proud of Cleveland Clinic’s embrace of opportunity and change. We thank the Greater Cleveland community that sustains us and whose health and wellness give us purpose and meaning. 2007 was a great year for Cleveland Clinic. We believe that 2008 is going to be even more impressive with greater accomplishments.

Sincerely,

Delos M. Cosgrove, MD
CEO and President

A. Malachi Mixon III
Chairman, Board of Trustees
Leadership in evidence-based practice through research is a top priority for Cleveland Clinic’s Nursing Institute. In 2007, nurses were actively conducting 73 research projects. They completed an additional 27 research studies, a 42% increase over 2006, and published 15 manuscripts, a 200% increase over 2006.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Grant and Contract Revenue</th>
<th>Total Federal Revenue</th>
<th>Total Laboratory Principal Investigators</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>$144.3M</td>
<td>$91.1M</td>
<td>194</td>
</tr>
<tr>
<td>2007</td>
<td>$159.1M</td>
<td>$96.9M</td>
<td>197</td>
</tr>
</tbody>
</table>

Cleveland Clinic Health System

<table>
<thead>
<tr>
<th>Year</th>
<th>Emergency Visits</th>
<th>Total Admissions (excluding newborns)</th>
<th>Surgical Cases</th>
<th>Inpatient</th>
<th>Outpatient</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>392,017</td>
<td>158,421</td>
<td>160,126</td>
<td>53,108</td>
<td>107,018</td>
</tr>
<tr>
<td>2007</td>
<td>404,232</td>
<td>164,380</td>
<td>168,082</td>
<td>57,611</td>
<td>110,471</td>
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</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Operating Revenues</th>
<th>Operating Income</th>
<th>Charity Care (at cost)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>4,399,049</td>
<td>372,201</td>
<td>110,454</td>
</tr>
<tr>
<td>2007</td>
<td>4,807,226</td>
<td>349,101</td>
<td>123,414</td>
</tr>
</tbody>
</table>

Notes:
Chart includes revised figures since 2006 annual report.
Health system statistics include Weston Hospital (Cleveland Clinic in Florida) beginning October 2006.

Patient Care 2007 Annual Report

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Visits (in millions)</th>
<th>Total Research Funding (in $ millions)</th>
<th>Aquisitions (in thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>3,070,759</td>
<td>240</td>
<td>55.0</td>
</tr>
<tr>
<td>2007</td>
<td>3,233,482</td>
<td>210</td>
<td>60.0</td>
</tr>
</tbody>
</table>

Patient Care:

Research:

Nursing:

Education:


Cleveland Clinic is the largest employer in Northeast Ohio and the second largest employer in the state.
Putting patients first in all we do

Why can’t a hospital be more patient-friendly? Cleveland Clinic asks why not? We are revolutionizing the patient experience, from redesigning the physical environment and addressing the emotional experience of patients to introducing “health navigators” who help guide patients through the entire hospital experience. Our Chief Experience Officer (a first for any major medical center) M. Bridget Duffy, MD, is analyzing the entire patient experience to identify gaps in care. “I walked in the shoes of patients, housekeepers, greeters, doctors and nurses,” says Dr. Duffy. “We’re learning everything it takes to make patients and families glad they chose Cleveland Clinic.”
Why can't hospital transfers be accomplished more quickly, safely and comfortably for the patient? Cleveland Clinic asks why not? We are revolutionizing hospital transfers with a new program that uses jet planes, helicopters and high-tech ambulances to bring patients to Cleveland Clinic and its regional hospitals. Under the leadership of A. Marc Harrison, MD, Director of Medical Operations, transfer protocols between Cleveland Clinic’s Emergency Department and our regional hospitals have been centralized and enhanced. “A team can be called to move a patient from Lakewood Hospital to Cleveland Clinic’s main campus or to pick up a patient from the other side of the world,” says Dr. Harrison.
Why aren’t medical centers organized to put patients first? Cleveland Clinic asks why not? We have revolutionized patient care by bundling related clinical specialties into institutes. The Neurological Institute, for example, combines neurology, neurosurgery, psychiatry, psychology, and its research and support functions into a single, powerful unit that focuses on the patient. Institute team members collaborate more often, problem-solve more easily. Research and innovation are enhanced, allowing us to pioneer new treatments and technologies for the benefit of all patients. Institutes give us the flexibility and focus we need to meet the challenges of medicine in the decades to come.
Why can’t failing hearts be healed? Cleveland Clinic asks why not? Marc Penn, MD, PhD, is revolutionizing the treatment of heart failure and creating a new enterprise in the process. He created a way of using the body’s own repair system to galvanize injured tissue and regenerate heart function during heart failure or heart attack. Working with Dr. Penn, venture experts at CC Innovations, Cleveland Clinic’s technology commercialization arm, established a company called AcelleRX Therapeutics. Enterprise development helps bring new therapies to patients everywhere and allows dollars to be invested into improving healthcare right here in Northeast Ohio.
Why can’t dialysis machines be more like real kidneys: small and portable? Cleveland Clinic asks why not? Researchers in the Lerner Research Institute are revolutionizing care for kidney failure through the development of an implantable artificial kidney that is no larger than a soda can. A team led by Shuvo Roy, PhD, is developing the device, which uses nanotechnology to filter blood through ultra-thin silicon wafers. If the device succeeds, it will operate around-the-clock without human intervention, freeing dialysis patients to move about the room and beyond.
Fostering academic excellence

Why shouldn’t a medical school produce physicians who want to heal and discover? Cleveland Clinic asks why not? Cleveland Clinic Lerner College of Medicine of Case Western Reserve University is revolutionizing the training of new physician-investigators. We challenge students to think critically through interactive seminars and problem-based learning approaches. Scientific inquiry is strengthened through daily interaction with leading researchers and clinicians. This approach has attracted top applicants from around the country. In 2007, 1,486 applicants vied for 32 positions, enabling the program to select students who are not only the best and the brightest, but also original, passionate and self-motivated.
Why shouldn’t a major medical center play a strong role in its community? Cleveland Clinic asks why not? We are revolutionizing our community involvement through outreach programs, education, research and clinical care. In 2006, our community benefit contribution totaled $390 million. To help community members access quality healthcare, Cleveland Clinic professionals give their time and talent to local shelters, schools and outreach clinics. We have created partnerships to build new housing, promote new businesses and support a diverse and healthy environment. “We want to help make our neighborhoods better places to live and work,” says Pamela Holmes, Senior Director of Community Outreach.
Making Cleveland Clinic the best place to work and grow

Why don’t we leverage the differences that make us special? Cleveland Clinic asks why not? We are revolutionizing our approach to diversity. We are creating synergy among people, cultures and communities to make Cleveland Clinic a better place for employees. Led by Deborah Plummer, PhD, the Office of Diversity has created resource groups for Blacks, Latinos, employees with disabilities and others. Other initiatives include the MD Project (designed to increase Cleveland Clinic’s number of minority physicians), and film and book groups that have sparked a lively discussion of the many differences that bring us together.
## 2007 YEAR IN REVIEW

### 2007 U.S. NEWS & WORLD REPORT

**AMERICA’S BEST HOSPITALS RANKINGS**

<table>
<thead>
<tr>
<th>OVERALL RANKING</th>
<th>Cleveland Clinic</th>
</tr>
</thead>
<tbody>
<tr>
<td>RANKED NO. 1</td>
<td>4th</td>
</tr>
</tbody>
</table>

**RANKED NO. 1**

| Heart and heart surgery | #1 for 13 years in a row |

**IN AMERICA’S TOP 2**

<table>
<thead>
<tr>
<th>Digestive disorders</th>
<th>7 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urology</td>
<td>8 years</td>
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</table>

**IN AMERICA’S TOP 10**

<table>
<thead>
<tr>
<th>Orthopaedics</th>
<th>4th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rheumatology</td>
<td>4th</td>
</tr>
<tr>
<td>Kidney disease</td>
<td>5th</td>
</tr>
<tr>
<td>Respiratory disorders</td>
<td>5th</td>
</tr>
<tr>
<td>Endocrinology</td>
<td>6th</td>
</tr>
<tr>
<td>Neurology and neurosurgery</td>
<td>6th</td>
</tr>
<tr>
<td>Gynecology</td>
<td>7th</td>
</tr>
<tr>
<td>Ear, nose and throat</td>
<td>9th</td>
</tr>
<tr>
<td>Geriatrics</td>
<td>9th</td>
</tr>
</tbody>
</table>

**AMONG THE TOP 20**

<table>
<thead>
<tr>
<th>Ophthalmology</th>
<th>12th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>17th</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>19th</td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>20th</td>
</tr>
</tbody>
</table>
Clinical Achievements

First Single-Port Kidney Surgery A team of surgeons led by the Glickman Urological and Kidney Institute’s Jihad Kaouk, MD, performed the first kidney surgery done through a single tiny opening, or “port,” in the patient’s navel. Operating with a newly approved device, they destroyed kidney tumors and left little or no scar on the patient’s body.

Ohio’s First “Beating Heart” Transplant A device that keeps a donor heart beating during transport was used for the first time in Ohio by the Heart and Vascular Institute’s Tomislav Mihaljevic, MD, and his team. Currently in clinical trials, the device keeps the donor heart warm and beating, and could ultimately shorten transplant wait times and broaden the geographic availability of donor hearts.

Radiofrequency Ablation for “Cervicogenic” Headache Dr. Ali Rezai, MD, of the Neurological Institute, and a multicenter team investigated the response of a minimally conscious patient to deep brain stimulation (DBS). Likened to a “pacemaker for the brain,” DBS stimulates minuscule patches of brain tissue with mild electric pulses. This is the first use of DBS to treat a patient who was minimally conscious because of traumatic brain injury and may be a new option for this previously untreatable condition. As a result of DBS, the patient’s overall motor control was improved to the extent that he was able to chew and swallow food, respond to verbal commands and complete complex movements, such as bringing a cup to his mouth and brushing his hair.

New Approach to Frozen Shoulder Collaborating with the Orthopaedic and Rheumatologic Institute, Nagy Mekhail, MD, PhD, and the pain management team have enhanced arthroscopic surgery for frozen shoulder. Dr. Mekhail’s approach integrates optimal pain relief with the surgical procedure using continuous epidural infusion, making it easier for patients to comply with post-surgical physical therapy and rehabilitation.

Potential Test for Myasthenia Gravis Using a technology that gauges the response of the pupil of the eye to light, the Neurological Institute’s Kamil R. Chemali, MD, has been able to detect certain forms of myasthenia gravis and small-fiber neuropathy, both movement disorders. Dr. Chemali has reversed the long-held belief that myasthenia gravis does not affect the pupil and provided what may someday be a simple, sensitive, affordable and noninvasive test for the disease.

Reconstructing Children’s Hands Over the past 20 years, William Seitz Jr., MD, of the Orthopaedic and Rheumatologic Institute, has pioneered callista-sis, a means of building fingers for children with congenital hand malformations. Dr. Seitz’s bone-lengthening technique involves the ultra-slow separation of healing bone, a process that evokes the growth of new bone and makes it unnecessary to graft tissue into the gaps. A new polysyndal frame and scaled-down lengthening devices designed by Dr. Seitz have improved the technique over the years.

Using Deep Brain Stimulation for Severe Brain Injury Ali Rezai, MD, of the Neurological Institute, and a multicenter team investigated the response of a minimally conscious patient to deep brain stimulation (DBS). Likened to a “pacemaker for the brain,” DBS stimulates minuscule patches of brain tissue with mild electric pulses. This is the first use of DBS to treat a patient who was minimally conscious because of traumatic brain injury and may be a new option for this previously untreatable condition. As a result of DBS, the patient’s overall motor control was improved to the extent that he was able to chew and swallow food, respond to verbal commands and complete complex movements, such as bringing a cup to his mouth and brushing his hair.

New Gamma Knife Technology The next generation of Gamma Knife®, known as Perfexion™, is up and running at Cleveland Clinic’s Gamma Knife Center. Under the leadership of John Suh, MD, of the Taussig Cancer Institute, the Neurological Institute’s Gamma Knife Center is the only site in Ohio to have the improved device. Used to treat head and skull abnormalities, the Gamma Knife can focus 192 high-energy beams on a small target with minimal or no harm to surrounding tissue.

Identifying More Children Eligible for Epilepsy Surgery Elaine Wyllie, MD, of the Neurological Institute, has found that examining MRI and EEG together in a new way may increase the number of children with severe epilepsy who are eligible for beneficial surgical treatment.
Cleveland Clinic Innovations Breaks Records

The mission of CC Innovations (CCI), Cleveland Clinic’s technology commercialization arm, is to “benefit the sick through the broad and rapid deployment of Cleveland Clinic technology.” In 2007, CCI established five new spin-off companies, for a total of 23 since its inception; supported more than $46 million in equity financing for Cleveland Clinic spin-offs; achieved its first sale of a spin-off (ReVasc was acquired by Micrus Endovascular for a total value of more than $10 million); executed 34 licenses; had annual revenue in excess of $8.7 million; facilitated the disclosure of 221 inventions (the most ever); and presented the 5th Medical Innovation Summit with more than 1,000 registrants (an all-time record). CCI also shepherded four new medical devices into patents in 2007.

In addition to being a leader in innovation management, CCI studies conflict of interest issues, assuring that Cleveland Clinic activities comply with the highest standards of innovation management.

“To benefit the sick through the broad and rapid deployment of Cleveland Clinic technology.”

Does Aortic Valve Repair Work? While mitral valve repair has a long record of success, aortic valve repair, pioneered at Cleveland Clinic by Delos M. Cosgrove, MD, has been more difficult to achieve. However, with newer modifications of the Cosgrove Technique, surgeons in the Heart and Vascular Institute have been experiencing increasing success in repairing leaky aortic valves with different pathologies. For patients with aneurysms and good, but leaking, aortic valves, the “David” reimplantation procedure has proved to be a highly successful but leaking, aortic valves, the “David” reimplanta-

tion procedure has proved to be a highly successful.

Pre-Formed Artificial Chordae for Mitral Valve Repair A. Marc Gillinov, MD, in collaboration with Biomedical Engineering, former Cleveland Clinic heart surgeon Michael Banbury, MD, and CC Innovations, has developed a system that simplifies the intraoperative creation and attachment of artificial chordae for valve repair. Called PreChords, the system provides prepackaged, premeasured chords plus a fixation device that eliminates the need for suturing inside the ventricle.

First Clinical Trial of Flexible Robotic Renoscopy Inderbir Gill, MD, of the Glickman Urological and Kidney Institute, has completed the first clinical trial of a novel flexible, robotic system that enables urologists to see inside the kidney. Renoscopy enables urologists to visualize and assess stones, tumors and other pathological conditions. The new system offers more control and better ergonomics than rigid or manually directed renoscopes.

Largest Experience with Partial Nephrectomy Andrew Novick, MD, and Inderbir Gill, MD, of the Glickman Urological and Kidney Institute, reported in the Journal of Urology the largest experience in the world with open surgical and laparoscopic partial nephrectomy (organ-preserving surgery) for treatment of kidney tumors.

Neuromodulation for Overactive Bladder Howard Goldman, MD, of the Glickman Urological and Kidney Institute, has demonstrated that electrical stimulation (neuromodulation) of the dorsal genital nerves is potentially efficacious for treating overactive bladder symptoms in women. Based on these results, a local biomedical company has developed a device for this purpose.

Patient-Friendly Surgical Tubing While smaller-bore surgical drainage tubes are less painful and less invasive for patients, they tend to clog, discouraging their use. The Heart and Vascular Institute’s A. Marc Gillinov, MD, and outside colleagues have partnered with the U.S. Department of Defense and industry to develop a new technology to prevent clogging and enable the use of smaller, less painful drains. Testing of the more patient-friendly surgical tubing is under way.

First Pouchitis/Pouch Disorder Clinic Cleveland Clinic has long been a leader in the lifesaving surgical remodeling of the lower digestive tract to form an internal pouch to receive wastes. Victor Fazio, MD, Feza Remzi, MD, Ian Laverty, MD, and Bo Shen, MD, of the Digestive Disease Institute, have established America’s first clinic for the treatment of some diseases that can affect the pouch. The program sees 15 to 25 patients per week, on average, from around the nation and other countries. Through the program, researchers are able to advance their knowledge of pathogenesis, risk stratification, diagnosis and treatment of a variety of pouch disorders.

First U.S. Use of Robotics for Catheter Navigation The Electrophysiology Laboratories in the Heart and Vascular Institute, under Director Walid Saliba, MD, was first in the U.S. to install and use a new robotic system designed to facilitate navigation of intracardiac catheters into hard-to-reach areas within the heart’s atria, or upper chambers, improving accuracy and stability.

Research Achievements

Viral Link to Prostate Cancer New attributes of a virus discovered last year by the Lerner Research Institute’s Robert Silverman, MD, PhD, of the Glickman Urological and Kidney Institute’s Eric Klein, MD, show that the virus is infectious in prostate cancer cells. In the new study, Dr. Silverman and Beihua Dong, MD, have established that the virus, known as XMRV — a previously unknown human retrovirus — is capable of producing DNA that fits into host DNA, triggering viral replication and spreading infection. Future studies will reveal if XMRV has a role in causing or spreading prostate cancer.

Why Breast Cancers Vary Breast cancer is variable in these tissues related to factors such as whether the cancer spreads to the lymph nodes and how aggressive it is. With this knowledge, it may be possible to develop new ways of predicting the course of breast cancers and individualizing treatment.
Angiogenesis and its Role in Asthma In the Lerner Research Institute, Kewal Asosingh, PhD, has discovered a key step in the early development of asthma. He has shown that new blood vessels emerge in the airway during asthma’s earliest stages through a process known as angiogenesis. This accounts for the greater number of blood vessels in asthmatic lungs, a previously noted characteristic tissue change. Dr. Asosingh identified the progenitor cells migrating from bone marrow to the lungs that trigger the angiogenesis, identifying a new target for future asthma care.

Unraveling the Mystery of Pulmonary Hypertension Serpil Erzurum, MD, of the Lerner Research Institute, has identified a metabolic abnormality in the lungs of patients with idiopathic pulmonary arterial hypertension, a condition of unknown origin in which the patient experiences elevated blood pressure in the pulmonary arteries. Dr. Erzurum and her team found that pulmonary artery cells in these patients consumed less oxygen, absorbed glucose at a higher rate and had poorly functioning mitochondria, a combination associated with low levels of nitric oxide that is often found in tumor cells.

New Interferon Trigger Robert Silverman, PhD, and Malathi Krishnamurthy, PhD, of the Lerner Research Institute, have discovered that interferon— an immune-system protein that fights viral infection—is elicited not only by the RNA molecules in invading viruses, but also by the body’s own RNA. This is an important piece to the puzzle of how the immune system works against viruses and could lead to new therapeutic strategies against viral infections.

Mechanism Behind Platelet Clotting The Lerner Research Institute’s Eugene A. Pedrez, MD, PhD, and his team have shown why blood platelets are more likely to clot when blood cholesterol is abnormally high, a factor that contributes to the formation of deadly clots when unstable plaques burst into the bloodstream. Dr. Pedrez identified the particular platelet membrane protein (CD36) and a novel family of oxidized lipids that are present in blood with high cholesterol as culprits. They offer new targets for drugs or genetic therapies to protect against cardiovascular disease.

Breakthroughs from the Hazen Lab Stanley Hazen, MD, PhD, of the Lerner Research Institute, and his team made significant contributions to understanding the molecular basis of atherosclerosis (a condition in which plaque collects on the inner lining of arterial walls) in 2007:

- Why Smokers Get Coronary Artery Disease
  The team has discovered the chemical link between smoking and the risk of coronary artery disease. They found that chemicals released into the blood by burning tobacco create a chemical reaction, called carbamylation, which corrupts LDL and HDL. Carbamylated LDL, the carrier of “bad” cholesterol, is more likely to promote the formation of plaque in arterial walls. It also injures cells that line vessel walls. Buildup of these fatty deposits and vessel wall injury can cause heart attacks and strokes. Their findings appeared in the journal Nature Medicine.

- How Good Cholesterol Goes Bad
  The team learned why not all “good” cholesterol is always good. They found that HDL becomes dysfunctional when a specific region on HDL is modified by myeloperoxidase (MPO), an enzyme present in white blood cells and found in atherosclerotic plaque. MPO inhibits HDL’s ability to remove cholesterol from the cells of the artery wall. The structure of HDL and how site-specific modification impairs function were determined. These findings may help explain why drugs that raise the overall HDL level do not always slow the progression of coronary artery disease. Their findings appeared in the journal Nature Structural & Molecular Biology.

- MPO as a Blood Marker for Heart Disease
  Dr. Hazen and co-researcher S. Matthijs Boekhoudt, MD, PhD, of Amsterdam, The Netherlands, have shown in a large, community-based screening study of more than 25,000 subjects that elevated levels of the enzyme MPO in the blood can help identify people at risk of developing coronary artery disease or heart attacks over the ensuing eight years. The study adds to previous findings by Dr. Hazen and his team that MPO not only inhibits the beneficial activity of HDL cholesterol (see above), but that elevated levels of MPO in the blood can signal increased risk for developing atherosclerosis and experiencing a heart attack, stroke or death. Their findings appeared in the Journal of the American College of Cardiology.

Beta Blockers Can Slow or Reverse Coronary Atherosclerosis Like Sipahi, MD, of the Heart and Vascular Institute, found that the class of medications known as beta blockers can brake and reverse the progression of coronary atherosclerosis. While beta blockers are already known to lower the risk of heart disease by lowering blood pressure and adrenergic activity, Dr. Sipahi showed that they also have a direct effect on atherosclerosis itself.

Improved Patient Experience ERAdvantage, Cleveland Clinic in Florida’s new Emergency Department program, is giving patients a more comfortable, convenient ED experience. A special concierge helps patients and their families with non-medical needs prior to treatment. Another plus: A newly recruited team of seven board-certified emergency medicine physicians is committed to seeing patients within 30 minutes of arrival in the ED.

Diabetes Drug Increases Heart Risk Steven Nissen, MD, of the Heart and Vascular Institute, found that rosiglitazone, a drug commonly prescribed to treat patients with type 2 diabetes, raises users’ risk of heart attack and cardiovascular death. Since 65 percent of deaths in diabetic patients are from cardiovascular causes, the effect of any diabetes therapy on cardiovascular outcomes is critical. (As a result of the attention this study received, the FDA ordered a boxed warning for rosiglitazone, indicating potential increases to the risk.)
“Environmental health and human health are inextricably linked. Cleveland Clinic and its hospitals are supporting environmental health with enthusiasm and energy.”

Leaving a Green Footprint

Cleveland Clinic undertook a major commitment to sustainability in 2007 by establishing the Office for a Healthy Environment (OHE). Led by Christina Vernon Ayers, AIA, LEED, the OHE created a new and expanded recycling program to include consumer, clinical and construction waste. More than 143,000 pounds of carpet was recycled in 2007, earning Cleveland Clinic the Tandus Environmental Stewardship Award.

Other initiatives include resource and energy conservation, waste management, promotion of locally grown food, environmentally preferred purchasing and a green building program. All future Cleveland Clinic buildings will be certified under the Leadership in Energy and Environmental Design (LEED) Green Building Rating System™, a nationally accepted benchmark that measures sustainability in buildings.

To reduce environmental toxicity, Cleveland Clinic has embraced greener cleaning, using a microfiber mop system and cleaning chemicals and methods that meet the Green Guide for Health Care™ standards.

“Environmental health and human health are inextricably linked,” says Ms. Ayers. “Cleveland Clinic and its hospitals are supporting environmental health with enthusiasm and energy.”

Since 2005, Huron Hospital has reduced waste by 37 percent through reducing, recycling and redirecting, and has won the Pillar Award for Community Service and the ArcelorMittal Environmental Stewardship Award, among others.

Together, Cleveland Clinic hospitals donated 80,000 pounds of reusable medical equipment and supplies to MedWish International, a Cleveland-based nonprofit organization dedicated to humanitarian aid.

Morphine Safe for Terminally Ill

Many terminally ill patients would benefit from the pain relief provided by morphine, but some physicians are reluctant to offer morphine out of concern that it might hasten death by depressing respiration. That fear may be exaggerated, according to research by Bassam Estfan, MD, and colleagues in Cleveland Clinic’s Harry R. Horvitz Center for Palliative Medicine. In a study of 29 terminally ill patients, Dr. Estfan found that, when carefully provided, morphine gave safe pain relief without depressing respiration.

Fatigue, Gender Linked in Athletic Knee Injuries

What goes up does not always do so safely. A study by the Orthopaedic and Rheumatologic Institute’s Susan Joy, MD, found that tired athletes are more likely to land in a pattern that might place the knee at more risk for an anterior cruciate ligament, or ACL, injury. She also found that female athletes were particularly at risk, owing to a greater angle through their knees upon landing. Using this knowledge, sports medicine specialists hope to devise strategies to prevent this common injury.

Detecting Hearing Loss in the Blood

Cardiologists performed 2,260 interventional cardiace procedures, 158 endovascular abdominal aortic aneurysm repairs and 64 percutaneous aortic valvuloplasties, among many other procedures, with some of the best outcomes in the nation.

Medical Support for NFL Players

Many professional football players leave the sport with permanent damage to their bones and joints. To help them recover, Cleveland Clinic will be providing joint replacement services as part of the National Football League and players union’s NFL Player Joint Replacement Benefit Plan. Cleveland Clinic and 13 other medical centers will provide specialized, coordinated care to players covered by the program.

Players eligible for assistance from the NFL Player Care Foundation will not be responsible for the cost of either the joint replacement surgery or postoperative rehabilitation.

Heart and Vascular Institute: Innovative Procedures, Impressive Stats

America’s No. 1 heart program is also one of the largest and busiest anywhere. The Heart and Vascular Institute recorded more than 290,000 patient visits and 16,000 hospital admissions in 2007.

Heart and vascular surgeons performed 3,418 open heart procedures and 535 minimally invasive surgeries, including 115 robotically-assisted cardiac surgeries. They performed 1,418 coronary artery bypass grafts, 2,194 valve surgeries and 397 great vessel surgeries. They transplanted 64 adult hearts, five pediatric hearts and 72 adult lungs.

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West Virginia Urology Program is 20

Cleveland Clinic’s Renal Transplant and Urology Program based at the Charleston Area Medical Center in Charleston, W.Va., celebrated its 20th anniversary in 2007. This program was the first Cleveland Clinic outreach initiative outside Ohio. Staffed and managed by the Glickman Urological and Kidney Institute, it is the only kidney transplant program in West Virginia. Since the inception of the program, more than 880 kidney transplants have been performed and countless additional patients have been treated for complex urological disorders.
Teamwork Enhances Clinical Innovation 
Percutaneous aortic valve replacement is a new treatment being investigated for select patients with severe symptomatic aortic stenosis (narrowing of the aortic valve opening). In a team effort that demonstrates the advantages of Cleveland Clinic’s institutes model, E. Murat Tutcu, MD, and Samir Kapadia, MD, of Cardiovascular Medicine, and Lars Svensson, MD, PhD, of Thoracic and Cardiovascular Surgery, collaborate with members of Cardiovascular Imaging and Cardiac Anesthesia in the assessment of patients and performance of the procedure.

First Classification of Pouch Disorders 
Bo Shen, MD, Feza Remzi, MD, Ian Laverty, MD, Bret Lashner, MD, and Victor Fazio, MD, of the Digestive Disease Institute, compiled and published the world’s first classification of disorders arising from and relating to lifesaving large bowel surgery that results in the creation of an internal pouch to collect wastes. The “Cleveland Clinic Classification of Pouch Disorders” arises from the Digestive Disease Institute’s unmatched experience in pouch procedures and will help guide practicing gastroenterologists and colorectal surgeons in accurately diagnosing and managing pouch disorders for years to come.

Neurological Surgeon Named “Innovator of the Year” 
Ali Rezai, MD, of the Neurological Institute, was recognized as Innovator of the Year at Cleveland Clinic’s Fourth Annual Innovator Awards Dinner. Dr. Rezai was honored for his contributions to the field of neurosurgery, his commitment to technology development and his development and use of novel clinical applications of deep brain stimulation. Dr. Rezai has submitted almost 60 inventions for review. Thirty-four have been licensed to date, and he currently has seven U.S. patents for surgical techniques and neuromodulation devices.

Expanding Reach of Surgical Robots 
The Heart and Vascular Institute now has the largest experience among major academic medical centers in robotic cardiac surgery. Tomislav Mihaljevic, MD, and Victor Fazio, MD, of the Digestive Disease Institute, completed the expansion of its Neurological Institute to Lakewood Hospital, including a $1.6 million renovation of its Neuro Integrated Care Unit. Successfully integrating Cleveland Clinic’s staff physicians with community specialists, the Cleveland Clinic Neurological Institute at Lakewood Hospital is, in the words of Fred M. DeGrandis, CEO and President of the regional hospitals, “a model for the whole system.”

News from Cleveland Clinic Children’s Hospital 
- Cleveland Clinic Pediatric Institute and Children’s Hospital recently launched an International Adoption Program, offering comprehensive care to internationally adopted children and their families. The program provides a wide range of specialized services, including pre- and post-adoption evaluations, ongoing primary care and multidisciplinary team evaluations of physical, developmental, behavioral and educational needs.
- A new Pediatric Pain Rehabilitation Program at Cleveland Clinic Children’s Hospital for Rehabilitation serves children and adolescents with chronic pain that may prevent them from going to school, interacting with peers or participating in normal activities. With inpatient and day hospital components, the program blends pediatric subspecialty care, behavioral health and rehabilitation therapies, and is already improving measurable symptoms by 45 percent in one group of children.
- Giving physicians better access to mental health resources for patients is the objective of the new Pediatric Primary Care Consult Service. The service streamlines the referral of patients for psychological care and is available at Cleveland Clinic Strongsville Family Health and Surgery Center and on Cleveland Clinic’s main campus.
- The Motor Control Program tripled the number of patients seen for gait modification (five in 2006; 15 in 2007). In collaboration with the technology development firm Infosites, the gait modification prototype unit now based at Cleveland Clinic Children’s Hospital for Rehabilitation will be commercialized to make this innovative technology available to a wider patient population.

Expanding Care into the Region 
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Throughout 2007, patients, employees and visitors have watched with anticipation as the largest building project in Cleveland Clinic history has risen from the ground. The Glickman Tower, and the Sydell and Arnold Miller Family Pavilion, which will serve as the new gateway to Cleveland Clinic, are on schedule to open in fall 2008. The Miller Family Pavilion, which will house the Heart and Vascular Institute, has nearly 1 million square feet of space and will feature 278 private patient rooms, state-of-the-art catheterization labs and operating rooms, and a rooftop plaza. The ground floor will include an assortment of stores and retail food options for patient and visitor convenience.
Building a World-Class Network of Care

In 2007, Cleveland Clinic regional hospitals (Euclid, Fairview, Hillcrest, Huron, Lakewood, Lutheran, Marymount and South Pointe) celebrated the first anniversary of their full-scale integration with Cleveland Clinic. Among the benefits of integration is sharing best practices to advance technology, improve patient experience and encourage innovation.

“We are well on the way to building a world-class network of community hospitals,” says Fred M. DeGrandis, President and CEO of the regional hospitals.

Additional progress across the region includes:

- the recruitment of 48 physicians in family practice, internal medicine, obstetrics/gynecology, pediatrics, interventional cardiology, endocrinology, hematology/oncology, neurology and psychiatry;
- all the regional hospitals earning the North America’s 100 Top Home Health Care award for quality of care; and
- the successful rollout of MyPractice electronic medical record to Fairview, Hillcrest, Marymount and South Pointe hospitals (all regional hospitals will have MyPractice by the end of 2008);
- expanded services at all hospitals, including health screenings and community health education events; and
- the successful launch of an online surgery tracking system at Huron Hospital, so patients’ families and loved ones can track the progress of surgery electronically.

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Education Institute

The Education Institute oversees Cleveland Clinic’s educational mission, including the Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, community education and one of the nation’s largest graduate medical education programs. The volume and diversity of clinical problems seen by trainees at Cleveland Clinic and the opportunity to participate in a group practice model of medical care provide an ideal teaching and learning environment.

In 2007, the Education Institute sponsored 790 residencies and fellows, and 138 advanced fellows. This number represents the highest graduate medical education enrollment in Cleveland Clinic history and demonstrates an upward trend that reflects Cleveland Clinic’s steady growth and specialization. These trainees participate in the Education Institute’s 59 ACGME (Accreditation Council for Graduate Medical Education)-certified programs and more than 70 non-accredited fellowships.

Physicians and other medical personnel around the world are required to keep their knowledge and skills up to date by participating in Continuing Medical Education (CME) programs. The Education Institute is a leading provider of CME courses in virtually all media. In 2007, the institute offered 324 CME programs to 77,190 participants from around the world. These programs ranged from 148 live courses to 95 online CME activities. Of live program attendees, 21 percent were from outside the Midwest and 11 percent were from outside the United States. The Educational Institute’s online site (clevelandclinicmeded.com) has seen its annual page views skyrocket over the past six years, from 10,000 in 2001 to 9 million in 2007. CME programs also were offered internationally at several sites, including Abu Dhabi, reflecting an increasing educational outreach to the international medical community in countries where Cleveland Clinic is establishing a medical presence.

The Education Institute offers patient education and health information for the public through its Center for Consumer Health Information. In 2007, the center provided 49 community Health Talks to 3,884 attendees. Users of the center’s online health information database continue to increase, with 17 million page views in 2007, up from 100,000 in 2001. Podcasts, webcasts and live web chats also are offered as a means of consumer health information outreach.

The Cleveland Clinic Lerner College of Medicine (CCJM) enjoyed a circulation of 101,000 in 2007, and was ranked second in readership among journals directed to office-based internists and cardiologists. CCJM’s website places it third among international medical office journals — behind the New England Journal of Medicine and Annals of Internal Medicine, and ahead of the Journal of the American Medical Association (JAMA).

The Cleveland Clinic Lerner College of Medicine of Case Western Reserve University has seen its number of applicants more than double over the past four years, to almost 1,500 applicants for 32 positions in 2007. The program’s students contributed 32 scientific articles, eight book chapters and 30 presentations to the world’s store of scientific knowledge in 2007.

A small sample of honors, appointments and achievements of Cleveland Clinic personnel in 2007:

Steven E. Nissen, MD, of the Heart and Vascular Institute, was named to the Time 100, which is Time magazine’s annual list of the world’s most influential people.

For several days, the front page of Cleveland’s Plain Dealer, as well as TV news and radio, covered the work of reconstructive surgeon Michael Fritz, MD, of the Head and Neck Institute, who reconstructed the face of gunshot-victim Johanna Orozco at MetroHealth Medical Center. (Dr. Fritz and his colleague Daniel Alam, MD, did similar work every day at Cleveland Clinic.)

Anne Mulcahy, Chairman and CEO of Xenos Corporation, announced that Xenos was donating $400,000 to establish a Fund for Educational Diversity at the Lerner College of Medicine of Case Western Reserve University. Ms. Mulcahy made the announcement while visiting Cleveland Clinic to speak at its Ideas for Tomorrow series.

Robert Wyllie, MD, Chairman of the Pediatric Institute and Children’s Hospital, won the Crohn’s and Colitis Foundation of America Premier Physician Award. Vanessa Jensen, PsyD, of the Pediatric Institute and Children’s Hospital, was a member of Ohio Governor Ted Strickland’s transition team in the area of juvenile justice.

Edward Benz, MD, of the Neurological Institute, completed his tenure as Chairman of the World Spine Society. His OrthoMEMS miniature spine sensor is well along the road to clinical application.
E. Murat Turec, MD, of the Heart and Vascular Institute, served as Chairman of the American College of Cardiology 2007 Scientific Sessions. He is the first Cleveland Clinic cardiologist to chair this event, which is the most attended (30,000 participants) yearly meeting of cardiologists.

Significant contributions to the field of audiology and the American Academy of Audiology were recognized, as Craig Newman, PhD, of the Head and Neck Institute, received the academy’s 2007 Presidential Award.

Richard Ransohoff, MD, of the Neurological Institute, was Plenary Speaker (“Interferon and MS”) at the 50th Anniversary of the Discovery of Interferon, in Oxford, UK.

Peter Brooks, MD, of the Orthopaedic and Rheumatologic Institute, completed the 100th hip resurfacing procedure at Euclid Hospital — a method that involves very little bone removal compared with traditional hip replacement and may allow younger patients to achieve a more active lifestyle.

Eren Berber, MD, and John Fung, MD, PhD, of the Surgery Institute, have established a laparoscopic liver resection program. Program surgeons have performed 21 procedures so far, with significant reduction in patient length of stay.

The International Society of Biological Therapy of Cancer gave its annual meeting keynote speaker, John Fung, MD, PhD, of the Neurological Institute, who have won three major awards for excellence in brain tumor research from the American Association of Neurological Surgeons since 2006, including 2007’s Synthex Award and Integra Foundation Award.

Andrew Novick, MD, Chairman of the Glickman Urological and Kidney Institute, received the Bar- ringer Medal, the highest honor of the American Association of Genitourinary Surgeons. Dr. Novick also became one of only seven people in the past 100 years to receive the highest honor of the International Urological Society, the SUU Astellas Award.

People magazine was one of many national and local news and media outlets to feature the innovative pediatric bone-lengthening techniques of William Seitz Jr., MD, of the Orthopaedic and Rheumatologic Institute (who was also asked to be the presidential guest speaker at the annual meeting of the Japanese Society of the Surgery of the Hand).

The highest honor of the American Society of Dermatopathology, the Founder’s Award, was present- ed to Wilma Bergfield, MD, Dermatology and Plastic Surgery Institute and the society’s 2006-07 president. Dr. Bergfield also received the Marta M. Duran, MD, Leadership Award 2008 from the International Society of Dermatology.

Thanks to the Neurological Institute’s large experience in deep brain stimulation (DBS), the Anesthesiology Institute’s Elhad Farag, MD, has been able to produce the first clinical report on perioperative complications during DBS, published in the Journal of Neurosurgical Anesthesia. The first clinical report for perioperative complications during blood-brain barrier disruption with the Neurological Institute’s Gene Barmett, MD, also appeared in the same journal.

The largest-ever report of cysobacterial ablation of prostate cancer has been completed by the Advisory Board for the COLD (Cryo On Line Database) under the chairmanship of the Glickman Urological and Kidney Institute’s J. Stephen Jones, MD.

The transgenic “super mouse” developed by Lerner Research Institute’s Satish Kalhan, MD, John Kir- wan, PhD, and Colleen Nye, in collaboration with principal investigator Richard Hanson, PhD, of Case Western Reserve University, made national and international news, from the BBC to CNN. A progeny of stamina, reproduction, weight loss and athletics, the mouse was developed as part of ongoing research aimed at understanding how a specific gene in skeletal muscles contributes to the muscles’ ability to process blood glucose, which is the basic “fuel” of the human body.

The Pulmonary Institute has emerged as a world leader in breath testing, hosting the first “International Breath Analysis Summit” (in collaboration with the International Association for Breath Research, NASA, the U.S. EPA, the Monell Chemical Senses Center and the Electrochemical Society) for participants from 22 countries and 18 states. Raed A. DeWek, MD, was summit director, as well as a session chair and speaker.

Chief Information Officer C. Martin Harris, MD, was appointed to the U.S. President’s Commission on Care for America’s Returning Wounded Warriors, convened to assess the needs of injured service members. A study to measure patients’ perceptions of noise and impact on sleep in hospital units is being done by the Nursing Institute’s Terri Murray, RN, BSN, and Jackie Spence, RN, nurse managers in the Heart and Vascular Institute’s stepdown units. When they complete their analysis of the extensive perceptual and demographic data they have collected, they will publish their findings.

Readers of Medical Imaging magazine voted Cleveland Clinic’s Imaging Institute one of the nation’s top three in hospital radiology programs.

Ideas for Tomorrow

In 2007, Cleveland Clinic CEO and President Delos M. Cosgrove, MD, inaugurated a speaker series called Ideas for Tomorrow. As Dr. Cosgrove said when introducing the series’ first guest, U.S. Supreme Court Justice Antonin Scalia, “Ideas for Tomorrow will bring distinguished thinkers, speakers and public personalities to Cleveland Clinic to share their thoughts and outlooks on the future.” Below are a few quotes from speakers who participated in the series in 2007:

Peter B. Lewis, philanthropist and former CEO of Progressive Corporation: “Innovation drives growth; growth drives innovation. It’s a very happy cycle.”

Frank Gehry, architect of the Guggenheim Museum in Bilbao, Spain, the Peter B. Lewis Building at Case Western Reserve University and the Walt Disney Concert Hall in Los Angeles: “A room can be uplifting, can make you feel good; public spaces can make you feel good. ... Architecture has the ability to do that. ...Very few hospitals are designed by great architects.”

William McDonough, architect specializing in sustainable buildings and Time magazine’s Hero of the Planet: “My goal is very simple: It’s to help create a delightfully diverse, safe, healthy and just world, with clean air, soil, water and power — economically, equitably, ecologically and elegantly en- joyed, period. What’s not to like?”

Antonin Scalia, U.S. Supreme Court Justice: “The rules that the [United States Supreme] Court adopts to explain what our constitutional vision is what it is, not rip it up and substitute some fanciful new world that Americans never recognized. The rule ought to be judged by the traditions it repre- sents, not the other way around.”
“You see things; and you say, ‘Why?’
But I dream things that never were;
and I say, ‘Why not?’”

GEORGE BERNARD SHAW