Founded in 1921, Cleveland Clinic is a not-for-profit academic medical center that integrates clinical and hospital care with research and education. Today, 1,700 Cleveland Clinic physicians and scientists practice in 120 medical specialties and subspecialties. In addition to its Main Campus Cleveland Clinic also operates 13 family health centers, 8 community hospitals and 2 affiliate hospitals, and a medical facility in Weston, Florida.

Cleveland Clinic is determined to exceed the expectations of patients, families and referring physicians. In light of this goal, we are committed to providing accurate and timely information about our patient care. Through participation in national initiatives, Cleveland Clinic supports transparent public reporting of healthcare quality data.

Cleveland Clinic participates in the following public reporting initiatives:

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

The Department of Thoracic and Cardiovascular Surgery is pleased to present our annual edition of *Outcomes*. This is the 3rd abridged version of cardiothoracic surgical results of Rochester General Hospital that relate our outcomes to national standards established by The Society of Thoracic Surgeons and regional standards established by the New York State Department of Health.

The outcomes reported here are the result of the collaborative efforts of cardiothoracic surgeons, cardiologists, cardiac anesthesiologists, vascular surgeons, and cardiovascular radiologists. In the future, treating patients with cardiovascular disease will become ever more complex and exciting as new surgical techniques and technologies emerge. Maintaining a high level of care for our patients will require maintaining a high level of collaboration between Rochester General Hospital, our Cleveland Clinic main campus and with our cardiothoracic colleagues nationally and internationally.

We hope that you will find this information helpful and thought provoking.

Bruce W. Lytle, M.D.
Chairman, Department of Thoracic and Cardiovascular Surgery
Overview

Rochester General Hospital (RGH) has now completed its third full year of affiliation with the Cleveland Clinic Department of Thoracic and Cardiovascular Surgery. Year three was a successful one, with consistently high surgical volumes as well as outstanding outcomes. This affiliation continues to provide access to new technology and procedures tested and validated at Cleveland Clinic and to enhance the cardiovascular care of the patients whom we serve.

### 2006

<table>
<thead>
<tr>
<th>Total Cases</th>
<th>1,334</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac Cases</td>
<td>893</td>
</tr>
</tbody>
</table>

### Cleveland Clinic Affiliate Thoracic and Cardiovascular Surgery Case Distribution

- **26%** RGH
- **14%** Hillcrest
- **10%** Fairview
- **9%** Lake West
- **9%** EMH
- **6%** MetroHealth
- **4%** Cleveland Clinic Florida
- **4%** Chester County
- **7%** Swedish
- **12%** Other

### RGH Case Distribution

- **38%** CABG
- **26%** CABG/Valve & Other
- **10%** Pacemakers
- **17%** Thoracic
- **9%** Valve

### Cardiac Case Distribution

- **57%** CABG
- **14%** CABG & Valve
- **13%** Valve
- **16%** Other

### VOLUME

In 2006, Cleveland Clinic thoracic and cardiovascular surgeons at Rochester General Hospital performed a total of 1,334 procedures. Of these, 893 were cardiac procedures, 222 were thoracic, and 219 were other procedures.

The number of times RGH has been named a Top 100 Cardiac Hospital by Solucient.
**Overview**

**Volume**
CABG with valve and other procedures increases by 19% from 2005 to 2006.

**Incidence**
Primary operation refers to a patient's first cardiac surgery. In 2006, 89% of cardiac cases at RGH were primary operations.

**Status**
96% of our patients were non-emergent.

**Gender**
In 2006, 65% of our patients were male, and 35% were female.

**Age and Mortality Distribution**
Rochester General Hospital treats a large number of elderly patients. Advanced age and associated medical conditions are known risk factors that can adversely affect cardiac surgical outcome.

**Physician Knows Best**
A longtime internal medicine physician, Dr. Richard Gangemi felt winded and had fleeting chest heaviness after climbing stairs. A week or so later, he found himself short of breath while walking up a ramp. With his medical background — and a family history of cardiac disease — he knew something was wrong. He made an appointment with his cardiologist, who delivered the news following an angiogram: he would need quadruple coronary bypass surgery.

Over the years, Dr. Gangemi had referred many patients to Rochester General Hospital. "I've watched the [heart] program evolve and blossom," says Dr. Gangemi, now the hospital's senior vice president of academic and medical affairs. "I knew how efficient the staff was and the results they were achieving. For me it was a no-brainer where I would get this done."

But while Dr. Gangemi was familiar with the hospital’s procedural efficiency and outcomes record, he had no preconceived notions of the pre- and postoperative care. Two days following his surgery, Dr. Gangemi developed pleuritic pains from the tubes in his chest. When he began having trouble breathing, a patient care technician gave him exceptional care and support. She spoke calmly and never left his side.

"I knew what was going on, and I knew she did also, but I've got to tell you, that kind of crossed the T's and dotted the I's for me that we have an exceptional program," he says. "You could recognize the talent and training she had. You think you know everything about an institution where you've spent so many years, but until you're there as a patient...."

Since his surgery, Dr. Gangemi has lost 20 pounds, lowered his cholesterol and exercises just about every day. He feels better than he has in more than a decade.

The experience Dr. Gangemi had on the other side of the hospital bed justified the advice he had doled out to so many patients for so long: If you've got chest pain, go to Rochester General Hospital.
Coronary Disease

**ARTERIAL GRAFTS**
Arterial grafts, with their excellent long-term patency, remain the conduits of choice for coronary revascularization. In 2006, 89% of isolated revascularization procedures received at least one arterial graft.

**POSTOPERATIVE MECHANICAL VENTILATION**
In 2006, over 90% of patients were extubated within 24 hours after isolated CABG surgery at Rochester General Hospital.

**POSTOPERATIVE COURSE**
In 2006, the majority of patients completed their hospital stay without experiencing any complications following isolated CABG surgery.

**MORTALITY**
Mortality for isolated CABG was 1.0%, which is lower than the New York State rate of 2.09% and below the Society of Thoracic Surgeons’ (STS) benchmark of 1.8%.

**2004 NEW YORK STATE MORTALITY**
The New York State Department of Health studies the effects of patient and treatment characteristics (called risk factors) on outcomes for patients with heart disease. The 2004 data for the isolated CABG population at Rochester General Hospital is shown below.

**LENGTH OF STAY**
In 2006, 47% of patients undergoing an isolated CABG were discharged in 4 days or less.
Valve Surgery

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11 Mitral Valve Repairs

In 2006, there were a total of 234 valve procedures performed. The volume of mitral valve replacement with CABG procedures nearly tripled.

MITRAL VALVE REPAIR

Mitral valve repair has been proven to be durable and offers a long term survival advantage over mitral valve replacement. In 2006, Rochester General Hospital performed 43 mitral valve repairs.

73% Tissue Valve Replacement
5% Mechanical Bioprosthesis
22% Mitral Valve Repairs

MITRAL VALVE REPAIR WITH ANNULOPLASTY RING

Cleveland Clinic research has shown that mitral valve repair is durable and has a long-term survival advantage compared with valve replacement. Rochester General Hospital’s experience is consistent with these findings and uses mitral valve repair as its therapy of choice whenever possible.

The Perfect Combination

“I thought I had a stomach bug,” explains 24-year-old Kim Marchewka. Her doctor directed her to Rochester General Hospital’s Emergency Department, where two days of extensive testing diagnosed the source of the problem: endocarditis, an infection in her heart that had spread to her lungs, spleen and liver.

Born with a nickel-sized hole in her heart, Ms. Marchewka had grown accustomed to regular cardiologist visits. But this widespread, life-threatening infection earned her an unexpected three-week stay in the hospital’s cardiac ICU.

In an intense surgical marathon, Dr. Ronald Kirshner and his team removed the bacterial growth from the deep tissue in the heart, while preserving the delicate conduction system tissue so as to avoid the need for a permanent pacemaker. Once the infection was removed, the tricuspid valve was replaced with a new bioprosthesis, and the hole in Ms. Marchewka’s heart was closed for good. During her three-week recovery, Ms. Marchewka was surrounded by an entire team of specialists who played an integral role in helping her to recover.

Today, recovered and back to work, Ms. Marchewka recalls the many compassionate moments with physicians and staff and the relationships she and her family developed through this experience. Nurses made sure her parents were comfortable, and they engaged in friendly conversation about their personal lives. “It was just normal conversation,” explains Ms. Marchewka, “which was a nice break from the doctors coming in and explaining what was happening with my kidneys or my pacemaker or the medications I was on.”

It was this combination of high quality clinical care and customer-focused compassion that made Ms. Marchewka and her family comfortable during her stay. “As much as they helped me,” says Ms. Marchewka, “I think they helped my parents, too.”
Video-assisted thoracic surgery (VATS) has been shown to reduce pain, shorten length of hospital stay, and offer a quicker recovery than traditional “open” surgery. This illustration shows the placement of operating ports for the VATS technique.
The partnerships between the Cleveland Clinic Department of Thoracic and Cardiovascular Surgery and its affiliate sites enhance opportunities to provide new treatments and therapies to patients as well as to accelerate mutual accomplishments in cardiac care. The following pages highlight some of the latest innovations being investigated at Cleveland Clinic.

**Robotically Assisted Valve Surgery**

Robotically assisted mitral valve repair represents a novel, minimally invasive approach in treatment of mitral regurgitation (leaky mitral valve). This approach allows performance of complex mitral valve repairs with the least amount of trauma to the patient. The operation is performed through a small incision on the right side of the chest, without the need for division of the breast bone. This operation is suitable for all patients with mitral valve regurgitation.

**Correcting Mitral Regurgitation**

Cleveland Clinic is participating in a large multi-center trial evaluating the Myocor Coapsys® device. This novel instrument is used to correct mitral regurgitation in patients with advanced coronary artery disease and associated functional mitral regurgitation. Mitral regurgitation that is caused by enlargement of the left ventricle is corrected by reduction in the diameter of the left ventricle after placement of the device.

**Next-Generation Heart Assist Devices**

Cleveland Clinic continues to offer the newest technology available for mechanical circulatory support. We are currently participating in clinical trials for second- and third-generation mechanical circulatory support devices for patients with a failing left ventricle. These devices are compact, easier to implant, and may be used in smaller patients who previously may not have been candidates for this type of support. The devices include Thoratec Corporation’s Heartmate® II Left Ventricular Assist System; the MicroMed DeBakey Ventricular Assist Device (VAD), and VentrAssist™ by Ventracor.

**Combined Minimally Invasive Valve Surgery and Ablation**

In 2006, Cleveland Clinic surgeons developed a new minimally invasive technique that enables combined mitral valve surgery and ablation of atrial fibrillation through a small chest wall incision. The left and right atrial lesion sets are depicted (blue circles).
Innovation

Heart Valve Tissue Graft

Cleveland Clinic cardiac surgeons are working with CryoLife Inc., an Atlanta-based biomedical and medical device company, to develop a heart valve tissue graft for patients with serious heart infections.

Currently, the majority of patients receive synthetic implants, which are more prone to infection. This new technology may potentially provide a more infection-resistant treatment option.

Patents covering the tissue preparation methods and implantation techniques have been filed by Cleveland Clinic, as active research and investigation continue.

Percutaneous Valve Surgery

Cleveland Clinic is one of three centers nationwide designated by the U.S. FDA as a study site for the percutaneous aortic valve technique. The procedure is performed in the cardiac catheterization laboratory under general anesthesia; no chest incision is required, nor is cardiopulmonary bypass. It requires close collaboration among the cardiac surgeon, interventional cardiologist, echocardiologist, and anesthesiologist.

Our multidisciplinary Cleveland Clinic team has pioneered several refinements and improvements of the percutaneous aortic valve procedure, including being the first site to:

- Utilize the iliac artery
- Treat bicuspid valves
- Place a valve within another valve
- Use 3-D imaging of aortic root to evaluate patients before and after the procedure

Total Artificial Heart

As a bridge to a heart transplant, the CardioWest™ total artificial heart by SynCardia Systems remains an option for patients suffering from biventricular failure and those with persistent ventricular arrhythmias. It is a pneumatic, biventricular, implantable system that completely replaces the failing heart.

Left Atrial Appendage Ligation

Physicians and researchers at Cleveland Clinic have developed a ligation device for clipping and isolating the left atrial appendage. Clinical trials of this device are under way. Delos Cosgrove, M.D., and A. Marc Gillinov, M.D., developed this device in collaboration with medical industry.

Self-Supported Annuloplasty

This complete, self-supported, and semi-flexible mitral and tricuspid annuloplasty stent-ring is introduced percutaneously and deployed using balloon technology. This prosthetic ring allows effective functioning of the valve and reestablishes normal shape and contour of the native annulus. Developed by staff surgeon José L. Nava, M.D., the system will be licensed to a medical device company in Spring 2007.
**Ronald Kirshner, M.D.**

Medical Director, Thoracic and Cardiovascular Surgery, Rochester General Hospital, a Cleveland Clinic Thoracic and Cardiovascular Surgery Affiliate Program

**SPECIALTIES:** Adult cardiothoracic surgery, mitral valve repairs, stentless valves, complex reoperations, process improvement of cardiac surgery

**MEDICAL DEGREE:** Temple University Medical School, Philadelphia, Pennsylvania

**SPECIAL TRAINING:** University of Rochester-Strong Memorial Hospital, Rochester, New York

**BOARD CERTIFICATIONS:** American Board of Thoracic Surgery

**CLINIC APPOINTMENT:** 2004

Dr. Kirshner is from Wilkes-Barre, Pennsylvania and enjoys bike riding and billiards.

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**David D. Cheeran, M.D.**

Staff Surgeon, Thoracic and Cardiovascular Surgery, Rochester General Hospital, a Cleveland Clinic Thoracic and Cardiovascular Surgery Affiliate Program

**SPECIALTIES:** Adult cardiothoracic surgery, complex reoperations, atrial fibrillation including minimally invasive surgical approaches, and mitral valve repair.

**MEDICAL DEGREE:** Jawaharial Institute of Medicine, Pondicherry, India

**SPECIAL TRAINING:** Texas Heart Institute, Houston, Texas; University of Rochester-Strong Memorial Hospital, Rochester, New York; Law Hospital, Carluke, Glasgow, Scotland; State University of New York, Buffalo, New York.

**BOARD CERTIFICATIONS:** American Board of Thoracic Surgery

**CLINIC APPOINTMENT:** 2004

Dr. Cheeran enjoys his daily exercise routine and spending time with his family.

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**Eli J. Becker, M.D.**

Staff Surgeon, Thoracic and Cardiovascular Surgery, Rochester General Hospital, a Cleveland Clinic Thoracic and Cardiovascular Surgery Affiliate Program

**SPECIALTIES:** Adult cardiothoracic surgery and adult thoracic surgery

**MEDICAL DEGREE:** University of Illinois, Chicago, Illinois

**SPECIAL TRAINING:** University of Rochester-Strong Memorial Hospital, Rochester, New York; Saint Elizabeth Medical Center, Boston, Massachusetts

**BOARD CERTIFICATIONS:** American Board of Thoracic Surgery

**CLINIC APPOINTMENT:** 2005

Dr. Becker grew up in Chicago. In his spare time he rides his Harley and plays guitar.
Contact Information

Evaluation for Cardiac Surgery (585) 544-6550
Surgical clinicians and office support personnel expedite the request for consult, organize the patient’s schedule and address questions.

Hospital Transfer (585) 922-7333
The Rochester General Hospital transfer line is available 24 hours a day, 7 days a week.

Direct to Surgeon (585) 544-6550
This is the cardiothoracic surgery office. Your call will be directed to the stated surgeon.

Emergencies (585) 922-4000
A cardiothoracic surgeon is available 24 hours every day. The on-call surgeon can be reached through the Rochester General Hospital operator.

Location (585) 544-6550
The cardiothoracic surgery office is located at Rochester General Hospital.

Main Campus www.clevelandclinic.org/heartcenter

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