COLUMBIA THORACIC SURGERY

Advanced Multidisciplinary Care for Chest, Lung & Esophageal Disease

ColumbiaDoctors

NewYork-Presbyterian
Columbia University Medical Center

Contents

Welcome

To better serve you, our patients, we have brought our many prestigious multidisciplinary medical programs together under one umbrella. The Price Family Center for Comprehensive Chest, Lung and Esophageal Care is located at NewYork-Presbyterian Columbia University Medical Center (NYP Columbia) in uptown Manhattan, and provides a full continuum of care for the most common and the most complex thoracic conditions—including esophageal and lung cancers, emphysema, cystic fibrosis, myesthenia gravis, disorders of the diaphragm, and PHT.

At our National Center of Excellence you will receive state-of-the-art diagnostic evaluation and benefit from the latest and most innovative treatments, including personalized medicine, that will help you achieve the best possible outcome.

NYP Columbia has made many groundbreaking advances in chest, lung and esophageal diseases. We are leaders in endoscopic and minimally invasive surgeries, allowing for shorter hospital stays and faster recoveries. Our lung transplant program is the largest in the north Atlantic region. We recently established the first program in the country treating disorders of the diaphragm and integrated care to help those suffering from heartburn and GERD. In addition, we have created a special program addressing lung cancer in women. Our patients have the opportunity to participate in clinical trials for the most advanced treatments—many offered only at this institution.

A Clinical Coordinator will guide you through all the steps from diagnosis to treatment and recovery so you can concentrate on getting better. Our seamless collaboration with multiple specialists ensures that you will receive the highest level of care in one convenient location. Our goal is to introduce you to all the members of your team on the same day.

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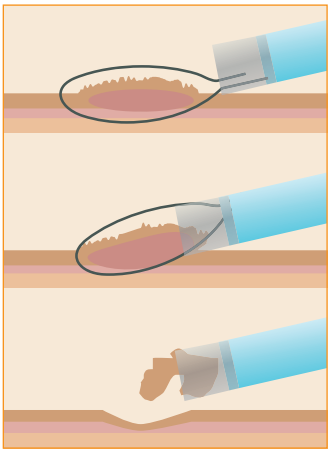
New Treatments for Esophageal Disorders

- **Esophageal Cancer** Columbia has introduced a new approach to esophageal cancer called Minimally Invasive Esophagectomy (MIE) that offers a more rapid recovery and survival rates superior to traditional open surgery. Columbia has been a leader in developing and teaching MIE. If found early, esophageal cancer can be managed with totally endoscopic, non-surgical techniques.



Endoscopic Treatment of Esophageal Cancer

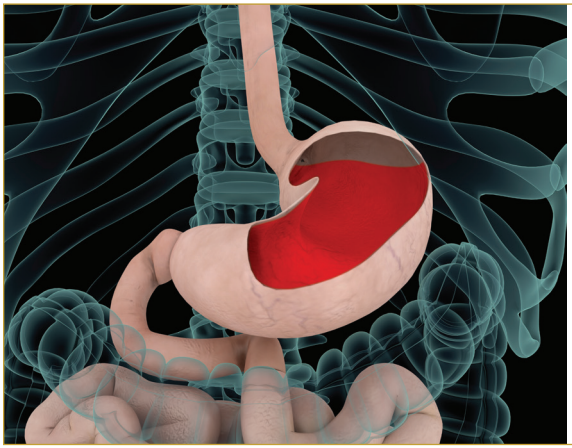
With a needle, saline is injected in the submucosa to raise the superficial layers and separate them from the deeper layers of the esophageal wall.

A snare is fitted on the inside of the cap.

The elevated lesion and the outer layers of the esophagus are suctioned into the fitted cap.

- **Barrett's Esophagus** We've made new strides in treating Barrett's esophagus, a pre-cancerous condition. Using radio frequency ablation (RFA)—applying an electrical current produced by radio waves to affected nerve tissue—we are often able to halt the progression to cancer. Thanks to a generous gift from the Price family, we are the first in the country to offer a screening program evaluating those at risk for esophageal cancer, and personalized treatments to prevent the development of this disease.

- **Motility Disorders** Our surgeons have pioneered a new treatment for motility disorders of the esophagus including the swallowing disorder, achalasia. Minimally-invasive videoscopic and robotic procedures are recommended in most cases.



Gastroesophageal reflux disease (GERD) is a chronic digestive disease. GERD occurs when stomach acid or, occasionally, stomach contents, flows back into your food pipe (esophagus). The backwash (reflux) irritates the lining of your esophagus and causes heartburn.

- GERD and Heartburn GERD (Gastroesophageal Reflux Disease) and heartburn now affect nearly one in ten Americans on a daily basis. Columbia offers a new alternative to continuous medication or traditional surgery. Using minimally-invasive techniques, our surgeons achieve the same effect—allowing patients to go home the same day.

- Interstitial Lung Disease We provide a detailed evaluation of interstitial lung disease collaborating with a team of specialists–including pulmonologists, thoracic experts, radiologists, a chest pathologist, pulmonary rehabilitation experts, and a rheumatologist. We then create a highly individualized care plan that may include supportive therapy, medication, and new agents under study. Our medical team works closely with NewYork-Presbyterian's renowned lung transplantation program to help eligible patients who have failed drug treatment. We also evaluate such individuals for concurrent and potentially treatable conditions such as chronic obstructive pulmonary disease (COPD), sleep apnea and deconditioning in an effort to improve their overall lung health.

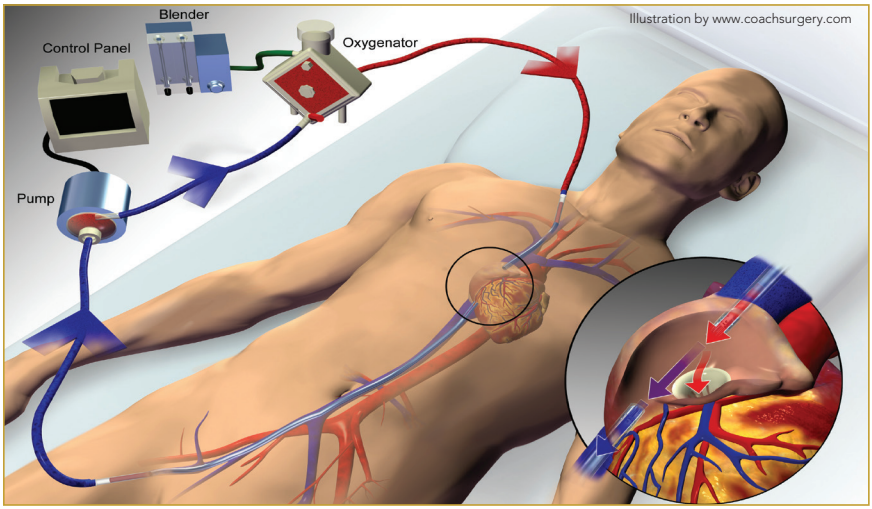
Advances in Treating Lung Cancer

- **Early Screening** Lung cancer is the leading national cause of death for both men and women and early screening has been proven to save lives. Our early detection program allows us to intervene before the patient experiences any symptoms. If lung cancer is diagnosed, we use the latest advances in surgery combined with chemotherapy or radiation to bring about a cure.
- **Advanced Surgical Techniques** Columbia surgeons are pioneers in Video-Assisted Thoracic Surgery (VATS), uniportal and robotic surgery, offering minimally invasive approaches to lung cancer. Our lung sparing techniques result in shorter hospital stays, faster recovery and return to normal activities.
- **Immunotherapy/Targeted Gene Therapy/Personalized Medicine** Our oncology colleagues are investigating new therapies to improve survival. Our patients have access to clinical trials using advanced immunotherapy and individualized gene analysis that more precisely target tumors, while decreasing standard chemotherapy side effects.
- **Women's Lung and Health Center** Lung cancer is the leading cause of cancer deaths in women worldwide, affecting more women each year than breast cancer, uterine cancer, and ovarian cancer combined. The majority of lung cancers among non-smokers also occur in women. Research indicates that women may have different forms of the disease than men. This may be explained by genetic or hormonal factors, or a combination of the two. We have also learned that women (especially non-smokers) tend to respond better than men to certain therapies for lung cancer. These findings have led us to create a multidisciplinary initiative designed to address the specific needs of women with lung disease.
- **Mesothelioma** Columbia is a national leader in the treatment of mesothelioma, a rare form of cancer in the lining of the lung associated with asbestos exposure. Our unique multidisciplinary approach to this disease combines chemotherapy, surgery and focused radiation therapy to save healthy lung tissue. At our national center of excellence, researchers are exploring the genetic causes of this condition and addressing advanced cases with hyperthermia (raising the temperature of body tissues).

Acute Respiratory Failure, ECMO and Lung Transplantation

NYP Columbia hosts the premier center in the northeast for the treatment of lung failure with outstanding outcomes for lung transplantation with three-year patient survival rates at 81%–well above the national average of 69%. Lung transplants can save the lives of patients with cystic fibrosis, emphysema and interstitial lung disease. In addition, we are developing new methods to replenish and repair lungs previously considered unsuitable for transplant. These discoveries have the potential to greatly increase the number of donor organs available in the future.

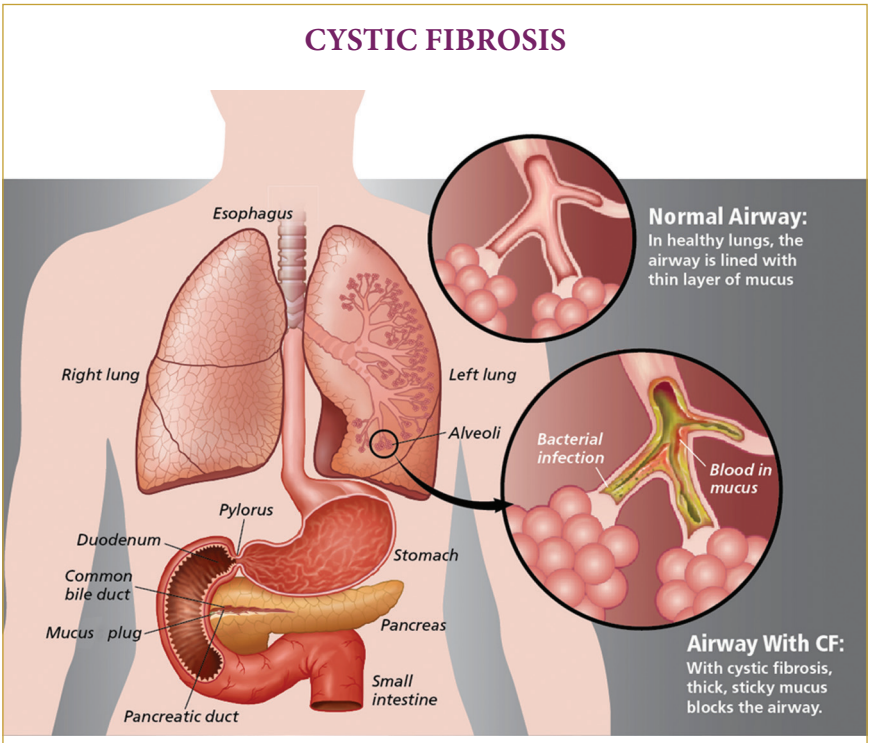
Our multidisciplinary team also provides the most advanced treatment for acute respiratory failure. We pioneered the use of extracorporeal membrane oxygenation (ECMO)—temporary support of the lungs using a bypass machine—to help patients in crisis. ECMO may also be used to transport and stabilize patients with ARDS (Acute Respiratory Distress Syndrome) and as a bridge to lung transplant. Our ExtraCorporeal Life Support program has received the Platinum Level ELSO Award for Excellence, recognizing distinguished programs worldwide that provide exceptional care.



ECMO is an extracorporeal technique providing both cardiac and respiratory support, giving oxygen to patients whose heart and lungs are so severely diseased or damaged that they can no longer function.

Cystic Fibrosis

NYP Columbia is renowned for successfully performing lung transplantation in patients with cystic fibrosis (CF). This genetic disease causes the build-up of thick, sticky mucus in the lungs and digestive tract. While we can control the disease through childhood, lung transplantation offers extended survival for older patients who suffer from severe and irreversible airflow obstruction. In addition, we have established The Gunnar Esiason program to help children with CF transition to adult care.



Cystic Fibrosis is an inherited life-threatening disorder that damages the lungs and the digestive tract, often affecting the pancreas, liver, kidneys and intestines.

Comprehensive Care for Pulmonary Hypertension, CTEPH and PERT

Pulmonary hypertension and chronic thromboembolic pulmonary hypertension (CTEPH) are rapidly progressive conditions leading to breathlessness and ultimately, to right heart failure and death when left untreated. NYP Columbia has the largest, multidisciplinary center in the world to manage these conditions with advanced medical and surgical therapies.

Our experts are among a few in the nation who routinely perform life-saving surgery for patients with CTEPH, a rare condition where the arteries in the lungs are narrowed by clots. Removing the clots significantly reduces symptoms. We are also known for urgent treatment of acute pulmonary clots.

As a new member of the PERT Consortium, (Pulmonary Embolism Response Team) inaugurated in 2015, NYP Columbia is in the vanguard of treating pulmonary embolism with a rapid response, multidisciplinary team.

A silent killer, pulmonary emboli (PE) is the third most common cause of death from cardiovascular disease after heart attack and stroke. With rapid diagnosis and treatment, survival rates can be significantly improved. The PERT Consortium aims to guide and influence pulmonary embolism care and research in institutions across the U.S. and to become the driving force behind increased survival rates and future treatment.

Our CTEPH-PTE Program is the only one in the region, and one of a few in the nation, to routinely perform life-saving pulmonary thromboendarterectomy (PTE) to clear the pulmonary arteries. In 2015 our center achieved a 100% survival rate for primary PTE operations.

CTEPH
The Signs & Symptoms

Myasthenia Gravis and Thymic Tumors

For more than 50 years Columbia surgeons have been recognized internationally for their exceptional care of patients with Myasthenia Gravis (MG). MG affects muscles and nerves, impairing swallowing, speaking and breathing. Removing the thymus, an immune system organ located under the breastbone, has been shown to reduce symptoms of this disease.

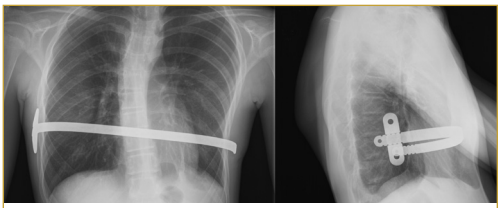
Our surgeons were among the first to show the effectiveness of thymectomy (removal of the thymus) to treat this condition, as well as to perform complete radical thymectomy using video-assisted and robotic surgery. This minimally invasive approach gives optimal cosmetic results, limits hospital stay to one day, and allows patients to return to normal activity within a week. Columbia physicians led an international study showing that thymectomy reduces symptoms in up to 70 percent of MG patients and, in some cases, provides a complete cure.

Columbia is one of the highest volume centers in the country treating patients with thymic tumors (thymoma and thymic carcinoma). Minimally invasive techniques and a full multidisciplinary team are achieving remarkable success with this rare disease.

Hyperhidrosis

Many people suffer from some form of hyperhidrosis (excessive sweating), a condition that can severely impact one's social life. Our surgeons are nationally known for a minimally invasive procedure called Endoscopic Thoracic Sympathectomy (ETS) that completely eliminates this problem. Refined at our Center of Excellence, this endoscopic technique produces a safe and effective cure for 98 percent of patients.

Pectus Excavatum/Nuss Program



X-ray of male patient after undergoing the Nuss procedure.

Pectus excavatum (a sunken breastbone) is often diagnosed in childhood but worsens with age. Our surgeons specialize in a minimally invasive repair called the Nuss Procedure, inserting a bar into the chest wall through a small incision under each arm. Using an endoscope (camera), we are able to position this bar with great precision without injuring major organs.

Disorders of the Diaphragm

Columbia launched the first multidisciplinary program in the country to address weakness and paralysis of the diaphragm. This condition can cause respiratory distress, sleep apnea and disorders of the nervous system. Treatments for diaphragmatic paralysis include phrenic nerve grafting (a repair of damaged nerves) and plication (flattening the dome of the diaphragm to give the lungs more room to expand). We are also world leaders in diaphragmatic pacing (applying electrical impulses to provide breathing support) and in repair of hiatal hernias.

Advanced Surgical Techniques

Image-Guided Surgery

New technology allows us to create a 3-D map of the patient's anatomy. This helps us to plan the surgery and allows us to visualize the operation while it is in progress.

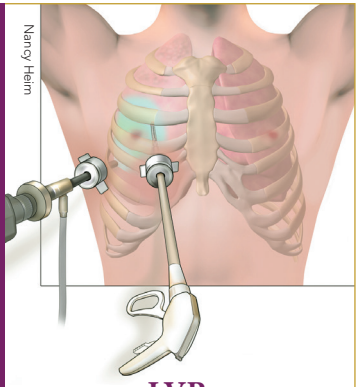
Our surgeons are also among the first to use a new imaging technique called Electromagnetic Navigation Bronchoscopy (ENB). ENB provides a computer-generated image of the lungs allowing us to view suspicious nodules. This technology facilitates the removal of nodules that would otherwise be inaccessible while reducing risks of bleeding or other complications.

Advanced Minimally Invasive and Robotic Surgery

Many procedures can now be accomplished using Video-Assisted Thoracic Surgery (VATS). This minimally-invasive approach results in a reduced hospital stay with faster recovery and return to normal activities. As leaders in this field, our surgeons are evolving new techniques combining minimally-invasive and robotic surgery.

We now offer trans-nasal endoscopy, a procedure that can be performed in an outpatient setting, with no sedation. This provides immediate diagnostic evaluation with no prep or interruption of medication. In addition, we perform uniportal single-incision lung cancer resections that further decrease potential pain and scarring.

Doctors perform a video-assisted thoracoscopic procedure (VATS).



LVR

One incision permits access of the thorascope for viewing. Forceps and a surgical stapling instrument are used to remove the affected tissue through two more incisions.

Lung Volume Reduction Surgery for Emphysema

Columbia's Lung Volume Reduction (LVR) Program offers some of the most innovative approaches to address advanced emphysema, a common form of chronic obstructive pulmonary disease (COPD). Active since 1994, our surgical team is the most experienced in the U.S. in removing severely damaged sections of the lung. LVR allows the remaining portion of the lung to function better and makes it easier for the patient to breathe.

A 10-year report on lung volume reduction surgery performed at NYP Columbia showed that this procedure offers lasting benefits to select patients with COPD. Our patients' one-year survival rate was 99% and three-year was 97% with major improvements noted in quality of life. Non-surgical LVR bronchoscopic technology will soon be available. Columbia is the only medical center in the tri-state area designated a National Center of Excellence for this advanced surgery.

Tracheo-Bronchoplasty

Tracheo-bronchomalacia is a severe airway disease that may respond to medical therapy including in-home CPAP, a machine that helps you breathe more easily while sleeping. It may also be treated with a procedure called tracheo-bronchoplasty that improves the symptoms of airway collapse. Columbia has one of the few teams dedicated to alleviating this end-stage lung disease.

Complex Tracheal Surgery

Disorders of the airway often require complex tracheal surgery. These challenging operations are only performed at a few institutions. Our surgeons are known for their success with such difficult procedures and are especially adept at treating benign tracheal stenosis—a narrowing of the airway caused by prolonged use of a breathing tube.

Faculty

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After transplant, CF patients like Tim Sweeney (left) may discover a new lease on life. To celebrate his recovery, Mr. Sweeney ran the New York City Marathon with his transplant surgeon, Dr. Joshua Sonett.

Contact Us

For all locations and further information about our programs and procedures, please call 212.305.3408 or email, info@columbiasurgery.org

More detailed information can be found on our website www.columbiasurgery.org/thoracic

Consultation services are available throughout the New York Metropolitan area, and New Jersey.

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