

finding the right balance

AdrenalCenter



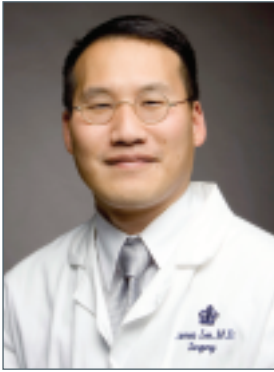
The Adrenal Center at
NewYork-Presbyterian Hospital/
Columbia University Medical Center

┌ NewYork-Presbyterian Hospital
└ Columbia University Medical Center



COLUMBIA UNIVERSITY

*College of Physicians
and Surgeons*



The multiple hormones produced by the adrenal glands impact organs and tissues throughout the body. As a result, patients with adrenal disorders require medical expertise from a variety of specialists. The mission of the Columbia University Adrenal Center is to provide patients with adrenal disorders compassionate and comprehensive care in one location. As an integral part of the Columbia University Medical Center, we are able to bring together some of the finest physicians in the world. For each patient, our team of

radiologists, endocrinologists, geneticists, cardiologists, and endocrine surgeons work together to plan the optimal course of treatment for the specific disorder and its effects on the rest of the body. Our center is one of only a few select programs in the U.S. that offer complete multidisciplinary care to serve this special group of patients.

We take pride in being able to meet the highly specific testing and treatment needs of our patients. Our facilities are equipped with the most advanced diagnostic equipment available including PET and MIBG scanners. Our dedicated endovascular facility enables us to conduct all of the sophisticated, cutting-edge diagnostic procedures our patients may require. Over 90 percent of our surgeries are performed using minimally invasive techniques that facilitate faster recovery and better quality of life after surgery. In addition to our clinical focus, we are committed to clinical and basic science research that investigates better ways to diagnose and treat adrenal disorders.

The expertise of our practitioners combined with the resources offered by the Columbia University Medical Center enable us to provide superior care to our patients and to advance the treatment of adrenal disorders. We are here for you and your family. We look forward to putting our resources to work for you.

A stylized, handwritten signature in black ink, appearing to read 'J. Lee'.

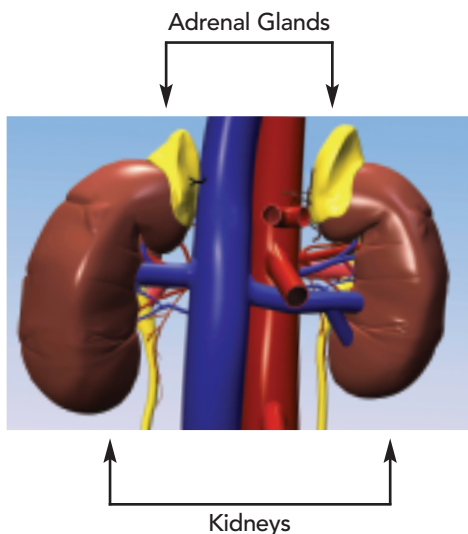
James A. Lee, MD
Director, Columbia University Adrenal Center

Adrenal glands and their functions

The two adrenal glands are triangle-shaped organs located above the kidneys. They are part of the endocrine system, which produces hormones essential to the normal function of the body. Hormones produced by the adrenal glands affect the entire body, regulating blood pressure, the immune system, and metabolism, among other critical life functions.

At the center of the adrenal gland is the medulla, which produces a group of hormones collectively known as adrenaline (including epinephrine and norepinephrine), that are essential to the 'fight or flight' response that occurs during periods of stress or activity.

The medulla is surrounded by a series of outer layers known as the cortex. The adrenal cortex produces a variety of hormones including cortisol, testosterone, estrogen, and aldosterone. Cortisol regulates our response to stress. Aldosterone regulates the body's balance of sodium, potassium, and water (electrolyte balance) and helps to regulate blood pressure.



Disorders of the adrenal glands

Adrenal disease is almost exclusively related to tumors, either cancerous or benign. When a tumor grows in the gland, it can produce too much of a hormone, leading to dysfunction in the body. It is believed that genetic abnormalities may predispose some people to adrenal tumors, but the majority of these tumors have no known cause.

Cushing's Syndrome is caused by too much cortisol production. Patients with this disorder have a characteristic appearance and symptoms that include a rounded, moon-like face, a fatty hump between the shoulders, thinning of the skin, easy bruising, and weight gain. This disorder can be caused by a single adrenal tumor, two hyperactive adrenal glands, or a tumor of the pituitary gland (located at the base of the skull).

Pheochromocytomas are tumors that produce too much epinephrine and norepinephrine. This excess of adrenaline can cause an increased heart rate and very high blood pressure, placing the patient at risk for stroke, heart attack, and other serious illnesses. Although this is a relatively uncommon disorder, it can be life-threatening if left untreated.

Aldosteronomas produce too much aldosterone, leading to a condition known as primary hyperaldosteronism. The patient's electrolyte balance is disturbed with low potassium levels and extra sodium in the blood leading to high blood pressure. The condition is the cause of up to 10% of all cases of high blood pressure. In the majority of cases, hyperaldosteronism is caused by an adrenal tumor and is cured by surgically removing it. Hyperaldosteronism is also caused by a condition known as bilateral hyperplasia in which both adrenal glands produce too much aldosterone. Bilateral hyperplasia responds well to certain medications.

An **incidentaloma** is a tumor in the adrenal gland discovered by chance during a radiologic test that is done for another reason. They are usually benign. Most adrenal incidentalomas are small (less than five centimeters in diameter) and do not cause problems. The two main reasons to remove an incidentaloma are: 1) it is producing too much of a hormone (typically easily diagnosed on screening tests) or 2) due to risk of cancer. The larger the tumor, the more likely it is to be malignant, and most physicians will consider removing a tumor if it is 3 cm or more in size. Patients with a history of other cancers should also be considered candidates for surgery to remove an incidentaloma because their tumor may be a metastasis of a cancer that has occurred elsewhere in the body.

Fortunately, **adrenocortical cancer** is rare. However, it is one of the most challenging diseases physicians face because it spreads quickly and does not respond well to treatment. These tumors may also produce too much of any of the hormones normally produced by the adrenal gland. The best treatment is surgery to remove all of the cancer at once.



If a diagnosis of a problematic adrenal tumor is made, our surgeons perform specialized surgery to precisely and safely remove it. At Columbia, surgeons perform 90 percent of adrenalectomies by laparoscopy, also known as 'key-hole' surgery. In these operations, the surgeon makes three or four small incisions, about one centimeter each, through which a camera and surgical instruments can be inserted to conduct the surgery within the closed abdominal cavity. Our surgeons have advanced training in laparoscopic surgery, and perform the operations in a specially-designed laparoscopic operating suite. Laparoscopy significantly reduces discomfort, speeds healing, and leaves only tiny scars behind. After laparoscopic adrenalectomy, the majority of patients are able to leave the hospital within a day or two of the the operation.

Diagnosis and treatment

Early detection and treatment of adrenal disease can profoundly improve a patient's quality of life and also decrease or eliminate negative effects on the rest of the body. The Adrenal Center has developed a streamlined, comprehensive method for screening and diagnosing patients. We have extensive radiologic and endovascular expertise that allows us to pinpoint the location of tumors.



Genetic Predisposition

If a patient has a family history of adrenal disease or certain other disorders, our genetic counselors will help to analyze the risk of other family members getting the disease. If the patient learns that there is a significant genetic risk, the counselor provides guidance and testing regimens for the entire family.

Specialists involved in the care of our patients include:

Endocrine surgeons, who have had advanced training in treating all disorders of the endocrine system and are experts in specialized operations for adrenal disease;

Endocrinologists, who specialize in the diagnosis and treatment of diseases related to the endocrine system, including the adrenal glands;

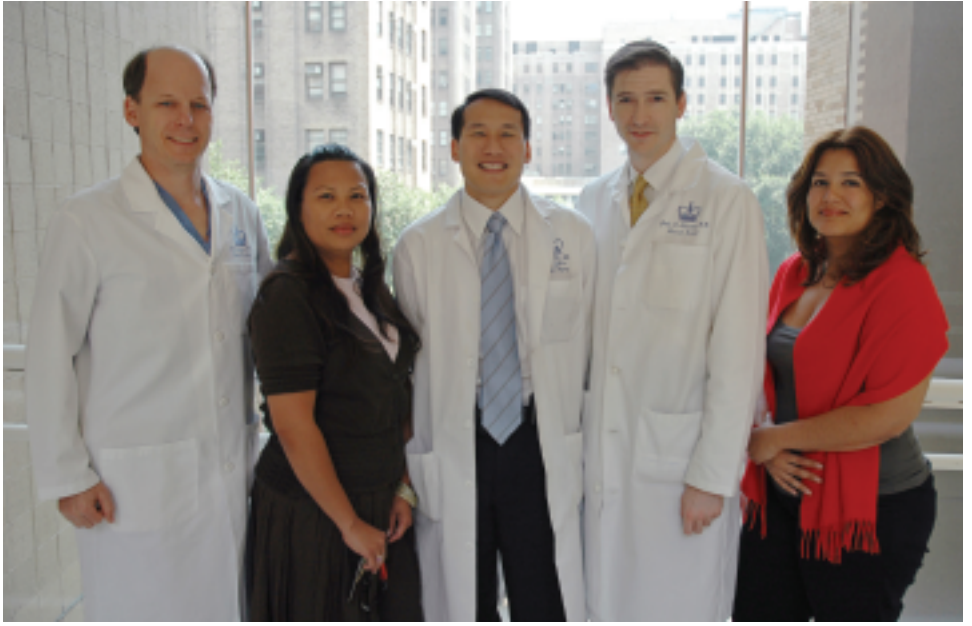
Genetic counselors, who work with patients to determine if they carry genes for adrenal disease, and advise and care for family members who are at risk;

Nuclear medicine specialists, who are expert in administering radioisotopes for state-of-the-art nuclear medicine procedures such as the MIBG scan to pinpoint the location of and sometimes to treat adrenal tumors;

Radiologists, who perform imaging tests such as MRI, CT (CAT), and PET scans to help diagnose and determine the extent of disorders;

Vascular surgeons, who are experts in performing selective venous sampling, a procedure to determine whether a hormone-producing tumor is present in an adrenal gland; and

Cardiologists, expert in the treatment of high blood pressure (hypertension), which can be one of the effects of adrenal disease.



From the left: Dr. William B. Inabnet, patient coordinator Rodelyn Zapanta, Dr. James A. Lee, Dr. John D. Allendorf, administrative assistant Leslie Marino



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For further information, please call 212-305-0333.

To learn more about the Adrenal Center, its clinical trials, and diseases of the adrenal glands, please go to:
www.columbiasurgery.org/pat/endo/adrenal.html

We are located at:

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1. The Milstein Hospital Building
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