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COLUMBIA UNIVERSITY  
MEDICAL CENTER

Department of Surgery  
In affiliation with  
NewYork-Presbyterian Hospital



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## Gastric Cancer

*New Center for Global Excellence takes aim at deadly disease.*

In a bold and unprecedented initiative, **Yanghee Woo, MD**, Director of the Center for Global Excellence in Gastric Cancer Care, is working to transform the face of a disease that has not received a great deal of public attention in this country. Having trained with the best in the field and become a highly regarded expert internationally, she is now aiming for nothing short of resetting the standards for treating gastric (stomach) cancer: to achieve early detection of gastric cancer in the U.S. and to cure gastric cancer worldwide.\*

Frequently related to *H. pylori* infection, stomach cancer is much less common in the U.S. than in countries such as Japan, Korea, Chile, Brazil, Iceland, and other countries with strong traditions of salted, pickled, and smoked foods. Though it may be less common here, it is far more deadly. In Asia and South America, physicians have much greater experience in diagnosing and treating stomach cancer than they do here in the U.S. With that familiarity, they are far better able to detect it at earlier stages when it is curable. Dr. Woo explains that in Japan and Korea, where she trained, a surgeon will treat 300-600 patients per year with gastric cancer; whereas in the U.S., a center is considered "high volume" if it performs ten gastric cancer surgeries per year.

### The Holy Grail: Early Detection

The only cure for gastric cancer is to surgically remove the stomach. That option is available if the cancer is found in early stages or in more advanced stages but confined to a localized area. In the U.S., more than 60% of cases are diagnosed when it is too late for surgery. Despite the use of chemotherapy and radiation, the five-year survival

rate is less than 50% in the U.S., with about half of patients dying within the year they were diagnosed.

"Of the approximately 21,000 people diagnosed with gastric cancer every year in our nation, most could be spared the risk of death through early detection," says Dr. Woo. In Japan, Korea, Singapore, and Taiwan, screening programs are in place just like mammography is



Using a surgical robot, Yanghee Woo, MD, Director of the Center for Global Excellence in Gastric Cancer Care, is able to excise cancerous tissue adjacent to the stomach with tiny incisions and extreme precision. The general surgery robot OR team from left, Andre Bolinas, Dr. Yanghee Woo, Aileen Caridad and Michael Johnson. Not pictured: Stefania Babel, Venice Berroya and Carmela Manzano

routine in the U.S. But here, where the incidence of gastric cancer is relatively low, widespread screening is economically unfeasible.

To find a way around the financial impediment to screening every adult, Dr. Woo is zeroing in on those at highest risk. Studies show that certain patients are at higher risk for developing gastric cancer than others, and Dr. Woo is using that data to find ways to target surveillance endoscopy to those who most need to be screened. Asian Americans are at highest risk, followed by black, Hispanic, and Caucasian Americans. In addition to ethnicity, the most important

# Evolution of a Heart

After the success of surgery for children with heart defects, unforeseen consequences can emerge during adulthood.

Since the 1980's, children born with structural heart defects have been extremely fortunate: for the first time, most of their defects could be successfully repaired, and they were able to enjoy normal lives. As a result of this success, the first generation of adults with congenital heart disease is thriving—a brand new population that simply did not exist in large numbers until today.

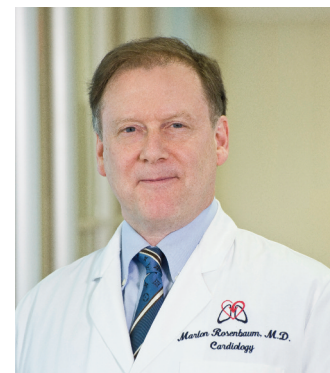
That they survived was clearly a tremendous success. But what would happen to their hearts as those children matured was largely not known, says **Emile Bacha, MD**, Director, Congenital and Pediatric Cardiac Surgery at NewYork-Presbyterian Hospital/Columbia University Medical Center. Without any precedent to guide them, surgeons believed that once a defect was repaired, the patient would be fine for the remainder of his or her life.

As it turns out, repairs for each of the 30 or so congenital heart defects have consequences of their own in the long term, explains **Marlon Rosenbaum, MD**, Director of the Schneeweiss Adult Congenital Heart Center at NewYork-Presbyterian/Columbia.

Today Dr. Bacha and Dr. Rosenbaum see many patients who underwent heart surgery during the 1970's or 1980's. According to Dr. Bacha, "During surgery for Tetralogy of Fallot, for instance, the surgeons would cut across the pulmonary valve and allow some regurgitation (leakage from the valve) to remain. That slow leakage can be well tolerated for a long time; children did well for many years after surgery. They did not know that creating that leak



**Emile Bacha, MD**, Chief, Division of Cardiothoracic Surgery, NewYork-Presbyterian Hospital/Columbia University Medical Center and Director, Congenital and Pediatric Cardiac Surgery, NewYork-Presbyterian Congenital Heart Center, Morgan Stanley Children's Hospital of New York



**Marlon S. Rosenbaum, MD**, Director of Adult Congenital Heart Disease, the Schneeweiss Adult Congenital Heart Center, NewYork-Presbyterian Hospital/Columbia University Medical Center

would slowly cause the right ventricle to increase in size, but by the time patients reached their mid-20's or 30's, ventricular enlargement would begin to present a serious problem."

Since consequences of early heart repairs often develop slowly and without symptoms, patients are often unaware that a problem may exist. Dr. Rosenbaum and Dr. Bacha emphasize that anyone who has had open heart surgery as a child should be evaluated by a specialist in adult congenital heart disease (ACHD), and at the very minimum have an annual echocardiogram. "If an adult had the Fontan opera-

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risk factors are infection with H. pylori and chronic swelling and inflammation of the stomach (atrophic gastritis). Other risk factors include a family history of stomach cancer, presence of a polyp larger than two centimeters, pernicious anemia, smoking, family cancer syndromes such as HNPCC, male gender, and age over 65.

With her multidisciplinary team at NewYork-Presbyterian/Columbia, Dr. Woo is currently developing a protocol to launch an early detection program for patients at higher risk for atrophic gastritis and H. pylori infection. "The goal of the early detection program is to identify those at highest risk of developing gastric cancer and to offer them endoscopy," explains Dr. Woo. Endoscopy is the gold standard for detecting the disease at earlier stages. The center is running this early detection program in collabora-

tion with surgeons at the Department of Surgery at São Paulo University, Brazil.

In addition to the above-mentioned factors, there is one known gene that increases the risk for gastric cancer: mutation of the CDH1 gene. People with this genetic defect have close to a 100% chance of developing gastric cancer. A database in New York is currently gathering data on patients with this genetic disorder.

## Minimally Invasive Robotically Assisted Surgery

In addition to the early detection initiative, the center at NYP/Columbia has established a robotic surgery program for the treatment of gastric cancer. Having done specialized training in robotic surgery for gastric cancer with the world's foremost experts, Dr. Woo has brought robotically



tion for a single ventricle defect as a child, it is important to check for problems now," says Dr. Rosenbaum. Twenty to thirty years after undergoing the Fontan operation, patients may develop severe enlargement of the right atrium, rhythm problems, blood clots, and reduced cardiac output. Because the pressure in the atrium can become so high, some patients also develop liver problems, problems with the veins in their legs, enlarged spleen, and other issues.

As Dr. Bacha explains, "Thousands of people have had open heart surgery and think they are fine, but they are typically sedentary. They often say, 'I feel fine, but I don't exercise because I get short of breath or cramps.' So they feel okay, but they are living sedentary lives. When we see such patients, we often find they have a leaky heart valve, or a hole in the heart that was left behind. Once that problem is corrected, patients are thrilled—they can go up stairs without becoming winded, and they stop feeling short of breath. Yet until they come in for evaluation, they just think it is normal to feel that way."

Evaluation by a specialist in adult congenital heart disease can also be very important for women with ACHD who wish to become pregnant. According to Dr. Rosenbaum, a careful evaluation can help patients to know whether pregnancy will be safe for them, or it may guide them about how to prepare for pregnancy by addressing any significant issues. "This is a very different approach from that of general cardiologists, who would typically tell patients to simply not get pregnant."

Treating ACHD requires multiple modes of treatment. For some patients, that could mean treatment with a catheter-based procedure; for others it could mean medications, electrophysiology therapy, surgery, or heart transplantation. For others, a combination of several approaches may be



*Anyone who has had open heart surgery as a child should be evaluated by a specialist in adult congenital heart disease (ACHD)*

required to treat more than one issue, such as a valve problem and an abnormal rhythm. The Schneeweiss Adult Congenital Heart Center is one of only a few centers in the nation that provides multidisciplinary expertise in every subspecialty for these complex problems.

"In order to preserve heart function and decrease arrhythmias, we are very proactive about evaluating in the absence of symptoms," says Dr. Rosenbaum. This approach differs from that of regular cardiologists, he explains, who usually evaluate and treat patients based on their symptoms. "For adults with congenital heart disease, we don't wait for symptoms to appear, because by then it may be too late."

"Our goal is to achieve significant longevity for adults with congenital heart disease," he continues. "Whereas pediatric cardiologists had the goal of allowing children to survive to adulthood, now we have our sights set on helping those adults achieve normal lifespans." ■

**Learn more about treatments for adult congenital heart disease at [congenitalheart.hs.columbia.edu](http://congenitalheart.hs.columbia.edu) or by calling 212.305.6936**

assisted lymph node dissection to NYP/Columbia, where it is now a standard of care. In lieu of a large abdominal incision, the use of robotic technology allows surgeons to use minimally invasive approaches to excise cancerous tissue. This is particularly valuable in cases where she must operate near blood vessels.

According to Dr. Woo, procedures requiring removal of the lymph nodes around the stomach are particularly challenging. Not only must the surgeon remove the nodes adjacent to the stomach, but those in the second layer out as well (called second tier). "Using the robot allows for more precision during this surgery," says Dr. Woo. Very few centers in the U.S. are able to offer this procedure; Dr. Woo has not only trained extensively in the surgical treatment of gastric cancer, but has researched and published extensively on its benefits to patients.

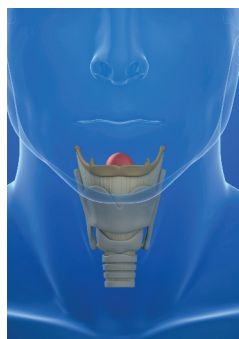
"It allows us to do more complicated surgeries with better magnification, less blood loss, fewer transfusions, better precision and accuracy, and better ability to control the whole operation," Dr. Woo says. Compared to open surgery, laparoscopic surgery benefits patients with decreased pain, fewer pulmonary complications, and a faster recovery. ■

**The Center for Global Excellence in Gastric Cancer Care is a multidisciplinary center that includes leading experts in gastrointestinal oncology, medical oncology, surgical oncology, nurse practitioners, nutritionists, family support staff, and others. For more information or to request an appointment at the gastric cancer center, please call 212.305.0374.**

*\*Stomach (gastric) cancer is also frequently called adenocarcinoma, which is the most common form of gastric cancer.*

# Radiation-Induced Thyroid Cancer

Assessing the risk after Japan's nuclear disaster.



The thyroid gland, found in the neck, plays a major role in regulating the body's metabolism

An expert in radiation-induced thyroid disease, **Robert McConnell, MD**, Co-Director of the New York Thyroid Center, discusses one of the many health concerns raised after the Japanese nuclear disaster one year ago: radiation-induced thyroid cancer.

After the Chernobyl accident in 1986, Dr. McConnell made 40 trips to the Ukraine and Belarus where much of the fallout landed. There he helped to care for and study the effects of radiation exposure on tens of thousands of people exposed to nuclear fallout, including approximately 25,000 children. About 6,000 people developed thyroid cancer, and that number is expected to increase.

What can then be expected after the Japanese reactor meltdown? Will radiation-induced cancer pose a threat to the Japanese, or to others beyond Japan's shores?

The thyroid is one of the most radiosensitive of all organs, meaning that it is particularly vulnerable to developing cancers after radiation exposure. This is especially true in children. In treatment, very high doses of radioactive iodine are administered therapeutically to treat an overactive thyroid by intentionally killing the thyroid cells. In uncontrolled exposure and lower doses, however, radioactive iodine can damage the thyroid rather than kill the cells, leading instead to an increased risk of cancer.

When large amounts of radioactive iodine are released into the environment, as happened in both Chernobyl and Japan, the thyroid will easily take it up. According to Dr. McConnell, "The thyroid cannot tell the difference between radioactive iodine and nonradioactive iodine, so if it is present in the environment, the thyroid will take it in."

Nonetheless, the risk of thyroid-induced thyroid cancer after Japan's crisis is fairly minimal, says Dr. McConnell. First,

although large amounts of radioactive iodine were released into the environment, the Japanese people were evacuated from the area quickly, and afterward, they were instructed to restrict their intake of green leafy vegetables, milk, and water from potentially contaminated sources. That did not happen in 1986.

Second, the types of radiation exposure differed in the two incidents. In 1986, people were exposed to high concentrations of radioactive cesium, strontium and iodine. Cesium and strontium have long half lives, meaning that radioactive contamination will remain for hundreds of years. Potassium iodine, a safe form of iodine, that can be used to saturate the thyroid and block it from absorbing radioactive iodine, does not protect the thyroid from these two radionuclides.

In Japan, cesium and radioactive iodine were released. Although cesium increases the risk for cancer in general, it poses no specific risk to the thyroid since it is not concentrated within the gland. Radioactive iodine, with its half life of eight days, was virtually gone in about two months. Since the Japanese largely evacuated the area around the nuclear power plant, their overall exposure was much lower than those living near Chernobyl 25 years before. Residual radioactive iodine that might have spread to surrounding areas still would have degraded and disappeared relatively quickly, making it very unlikely that people in distant areas would have been impacted.

Finally, thyroid cancer is largely treatable, says Dr. McConnell. The most common type of radiation-induced thyroid cancer is papillary thyroid cancer, and the great majority of cases are slow growing and curable. At the New York Thyroid Center, where patients are treated by a multidisciplinary team of endocrinologists, surgeons, nuclear medicine experts, and other specialists, the survival rate is approximately 99% at ten years among men under 40 and women under 45. ■

Learn more about radiation exposure and thyroid cancer, and treatment of thyroid diseases, at [columbiathyroidcenter.org/risks.html](http://columbiathyroidcenter.org/risks.html)



## The Lustgarten Foundation's Pancreatic Cancer Research Walk

Sunday, May 6, 2012, 9:30 am

Clinton Cove at Hudson River Front Park  
Pier 95 and Pier 96, Cross at W. 55th Street, New York, NY 10019  
(at West Side Highway on Hudson River)

## PURPLESTRIDEWALK

5K Run/Walk

Sunday, April 21, 2012

Riverside Park

97th Street & Riverside Drive  
New York, NY 10025

For more information and registration for both walks: [www.ColumbiaSurgery.org](http://www.ColumbiaSurgery.org) • Click on "Events"