Cleveland Clinic

Bladder Cancer Treatment Guide

Your Guide to Bladder Cancer Treatment

Bladder cancer is a disease in which an abnormal uncontrolled growth of cells (tumor) is found in the tissues of the bladder. Bladder cancers can form in many locations in and around the bladder and the cancer cells can penetrate through the different layers of the bladder wall. The deeper the invasion, the more likely the cancer cells can spread to other organs.

Cleveland Clinic bladder cancer specialists tailor bladder cancer treatment plans to their patients' needs. This guide provides an overview of the bladder cancer treatment options offered at Cleveland Clinic.

Through a multidisciplinary approach, Cleveland Clinic urologists in the Glickman Urological & Kidney Institute work with specialists in the Taussig Cancer Institute to explore all medical and surgical options to ensure that our bladder cancer treatment program will result in a successful outcome for each patient.

This collaboration means that you will get the care you need right away. For many cancers there are significant differences in outcomes between centers. Aside from improved survival rates, comprehensive cancer centers like Cleveland Clinic often offer shorter hospital stays, reduced rates of complications, better management of side effects and access to the latest clinical trials. Cleveland Clinic makes its outcomes available at clevelandclinic.org/quality.

While there are many bladder cancer treatment options, you should also consider the experience of the cancer program. The Taussig Cancer Institute is the highest ranked in Ohio according to *U.S.News & World Report*. And for the past nine years, Cleveland Clinic's urology program has been named one of the top two in the nation.

Please use this guide as a resource as you examine your treatment options. Remember, it is your right as a patient to ask questions, and to seek a second opinion.

Taking Charge Helps in Early Detection

In business and in life, Thomas "Chip" Coakley is a take-charge person. So, when he noticed blood in his urine while on a bike ride in 2006, passivity was not an option. He immediately made an appointment to see Raul Seballos, MD, of Cleveland Clinic's Department of Preventive Medicine. The diagnosis was bladder cancer.

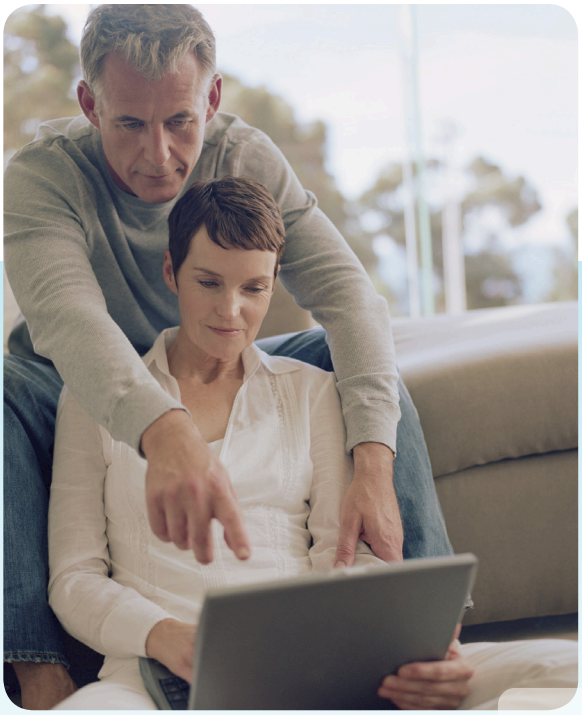
Dr. Seballos referred Mr. Coakley, 63, of Shaker Heights, Ohio, to J. Stephen Jones, MD, of Cleveland Clinic's Glickman Urological & Kidney Institute. Because the cancer was diagnosed early, Dr. Jones was able to perform a minimally invasive resection surgery. He then prescribed Bacillus Calmette-Guerin (BCG), an immunotherapy directly injected into the bladder via a catheter to control the cancer.

The treatment appears successful as Mr. Coakley is cancer-free and fully recovered, Dr. Jones says. Mr. Coakley is examined every four months because bladder cancer can rapidly recur.

Thomas "Chip" Coakley

Through it all, Mr. Coakley's spirit never waned, helped in part by his experience with Cleveland Clinic. "Dr. Jones was great through the whole diagnosis and evaluation phase," he says. "There was no panic. He explained the entire situation and what to expect during treatment."

Mr. Coakley's assertiveness was crucial. If he would have waited to see Dr. Seballos when he first suspected a problem, he says it is likely the cancer would have spread to the bladder wall, which would have meant reconstructive surgery. "Fortunately, we caught it early," he says. "I came through it with the help of Dr. Jones and Cleveland Clinic."



About Bladder Cancer

Bladder cancer most commonly strikes men, and most people who get this cancer are older than 55. The most common and strongest risk factor for bladder cancer is smoking. Smokers are more than twice as likely as non-smokers to develop bladder cancer, according to the American Cancer Society. Other risk factors include being exposed to certain substances at work (e.g., rubber, certain dyes and textiles, paint and hairdressing supplies), a diet high in fried meats and fat, chronic bladder inflammation, having had external beam radiation to the pelvis, taking Aristolochia fanghi (an herb used in some weight-loss formulas).

Bladder tumors are characterized by type, stage and grade. This characterization will help determine the therapy that is most likely to be successful.

Types of Bladder Cancer

Transitional cell (urothelial) carcinoma is the most common form of bladder cancer, accounting for more than 90 percent of these cancers. This type originates in the transitional cells that line the bladder and urinary collecting system.

Squamous cell carcinoma is a rare form of bladder cancer, accounting for 6 to 8 percent of all bladder cancers. It begins in thin, flat cells that can be found throughout the body, including the bladder.

Adenocarcinoma can arise in the bladder or spread from elsewhere in the body.

Small cell bladder cancer is extremely rare (1 to 2 percent of all cases) and tends to be aggressive.

Bladder tumors may take different forms, but all are derived from the internal lining of the bladder. Non-muscle-invasive urothelial tumors have not invaded into the underlying bladder muscle.

Papillary urothelial tumors of low malignant potential are slender projections resembling a cauliflower that grow from the bladder lining and project into the lumen (interior space) of the bladder.

Much more common is papillary urothelial carcinoma, the malignant counterpart. Its cells have irregular sizes, shapes and arrangements. When these abnormalities are slight, the tumor is considered low grade. They seldom invade the bladder wall but often return following removal. The risk of bladder wall invasion is greater when cells in these tumors are high grade, i.e., they appear angry under the microscope. These tumors can recur in the bladder or elsewhere in the urinary tract. Patients who have had bladder tumors removed are examined regularly to check for recurrence.

Flat urothelial tumors (carcinoma in situ or CIS) affect only the cells in the interior bladder lining. In the great majority of instances, these cancers are limited to the lining. When they invade the muscle layer they are called invasive urothelial carcinomas.

Stages of Bladder Cancer

The information gathered through examinations and diagnostics helps cancer specialists determine the stage of cancer. The stage indicates how widespread the cancer is, the best treatment options and the patient's prognosis.

There are several staging systems. The most commonly used is the TNM system in which T = tumor, N = lymph node involvement, and M = metastases, or the spread of cancer cells to locations distant from the bladder. Each letter is followed by a number to indicate the extent of tumor growth, whether it has spread to the lymph nodes, and whether it has spread to other sites.

Grading Bladder Cancer

Pathologists "grade" the cancer according to the nature of the cancer cells within the tissue samples they have received from biopsies. There are two main grades: low grade, or well-differentiated cells, and high grade, or poorly differentiated cells. Low grade cells may vary in size but most look relatively normal. High grade cells make for the most aggressive form of bladder cancer. They are distorted, vary greatly in size and have an angry look to them.

Treatment Options

Treatment for bladder cancer depends on how deeply the cancer has penetrated into the bladder wall, i.e., the stage of the cancer and the patient's age and general health, among other factors. The proper course of bladder cancer treatment is determined only after consultation between the patient and his or her physician.

In general, non-muscle invading tumors of the bladder lining are treated with surgery to remove the tumor. This is performed using a cystoscope and by looking into the bladder and trimming the tumor away from the lining of the bladder (See TURBT next page). Sometimes this is followed by instillation of a medication called Bacillus Calmette-Guerin (BCG) into the bladder to lower the risk of recurrence. Invasive tumors that have penetrated into the bladder wall typically require surgery that removes the whole bladder.

New Technology Improves Treatment

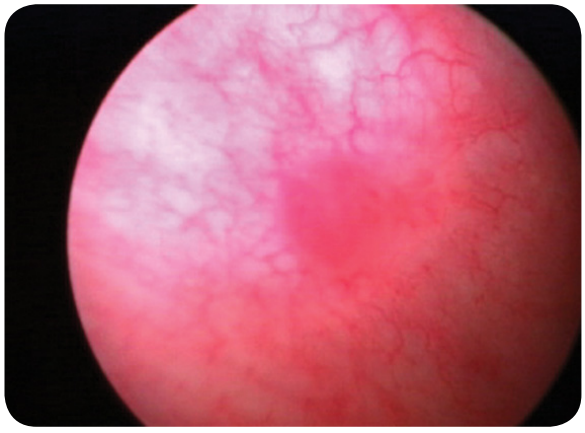
Cleveland Clinic is among the first centers in the United States to use a new technology called Cysview(TM) that allows doctors to clearly see cancerous growths in the bladder.

The Cysview system is an extension of traditional cystoscopy, in which a thin, tube-like telescope called a cystoscope is carefully passed up the urethra (the tube through which urine leaves your body) and into the bladder.

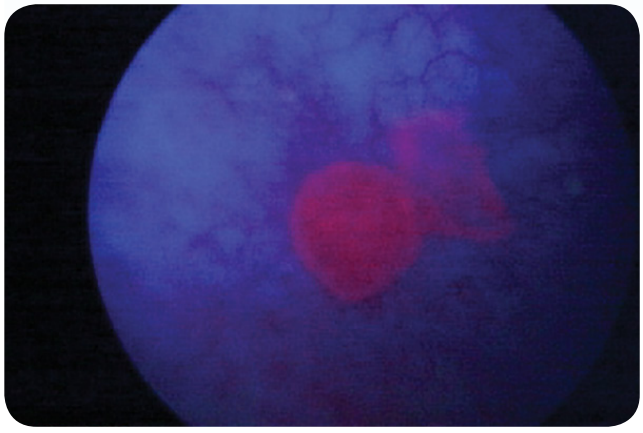
Cystoscopy lets the doctor inspect your bladder lining very closely for any abnormal growths or suspicious areas, which can be removed for further examination using tiny surgical tools passed through the scope.

Cysview blue light cystoscopy uses a fluorescent dye to highlight growths when the patient is placed under a special light.

During the procedure, the bladder is examined in white and blue light. Cysview accumulates in the tumor cells and glows pink under blue light. The tumor cells are highlighted and stand out against the normal bladder tissue, which keeps its blue appearance.



Bladder image in white light setting (Mode 1).



Same bladder image in blue light setting (Mode 2) with Cysview™. Image supplied by Maximillian Burger, MD, University of Regensburg, Germany.

The Glickman Tower, named after philanthropists Carl and Babs Glickman, opened in 2008 as part of the largest construction project in Cleveland Clinic history. The 200,000 square-foot tower is the home of the Glickman Urological & Kidney Institute. At 12 stories, it is the tallest building on Cleveland Clinic's main campus and includes state-of-the-art diagnostic and treatment facilities including an expanded dialysis unit with scenic views, a rooftop helipad for critically ill patients, and a chapel and meditation room.

Transurethral resection of a bladder tumor (TURBT) Patients with Stage 0 or Stage I disease are most often treated with this type of surgery. The procedure is performed under general or spinal anesthesia. A thin telescope (cystoscope) is inserted through the urethra (a tube connected to the bladder and through which urine is expelled from the body). Miniaturized fiber optics and miniaturized surgical instruments are threaded through the cystoscope to remove cancerous tissue and some of the muscle tissue surrounding it. After surgery, some bleeding and discomfort may occur; however, most patients can return home the same day and resume usual activities in less than one week. This procedure can be repeated if patients have recurrences of non-muscle invasive tumors.

Our urologic oncologists perform more than 600 transurethral resections of the bladder each year.

Partial cystectomy Removal of only a portion of the bladder is a viable option when a tumor is invasive but all evidence indicates that it is a solitary tumor limited to a defined region of the bladder. The procedure reduces the size of the bladder but preserves a significant portion. Partial cystectomies may be accompanied by radiation and chemotherapy treatment. Because only a portion of the bladder is removed, patients are able to urinate normally after recovering from surgery. Only a minority of patients with invasive bladder cancer will qualify for partial cystectomy.

Radical cystectomy This procedure involves complete removal of the bladder and is the most common treatment for muscle-invasive bladder cancer. An incision is made in the abdomen, and the bladder, surrounding lymph nodes and adjacent organs are carefully examined to determine the status of the cancer and see if it may have spread to adjacent structures and organs. The bladder is removed along with any other organs that may be affected. This procedure now also can be performed robotically in select individuals.

Reconstructive procedures can be done for patients who must undergo radical cystectomy. In a procedure called urostomy, a segment of intestine is removed and reattached to the ureters, leading urine from the kidneys to an opening (stoma) near the belly button. A light, leak proof bag is attached to the stoma to collect urine. The bag can be emptied as needed.

A segment of intestine also can be formed into a pouch or "neobladder." The neobladder is placed in the cavity left by the bladder and stores urine. The neobladder is then attached to the urethra to allow urine to be drained normally. The application of these procedures is dependent upon a number of factors. They are not available to all patients but can be successfully implemented in many.

Robotic (minimally invasive) radical cystectomy is offered to select patients. Cleveland Clinic is a leader in the field of robotic and laparoscopic (also minimally invasive) radical cystectomy, having performed more than 200 such cases as of 2009.

Intravesical therapy is cancer treatment that is placed directly into the bladder through a catheter rather than being given by mouth or injected into a vein. The most common form of intravesical therapy used in bladder cancer is immunotherapy. This treatment causes the body's own immune system to attack the cancer.

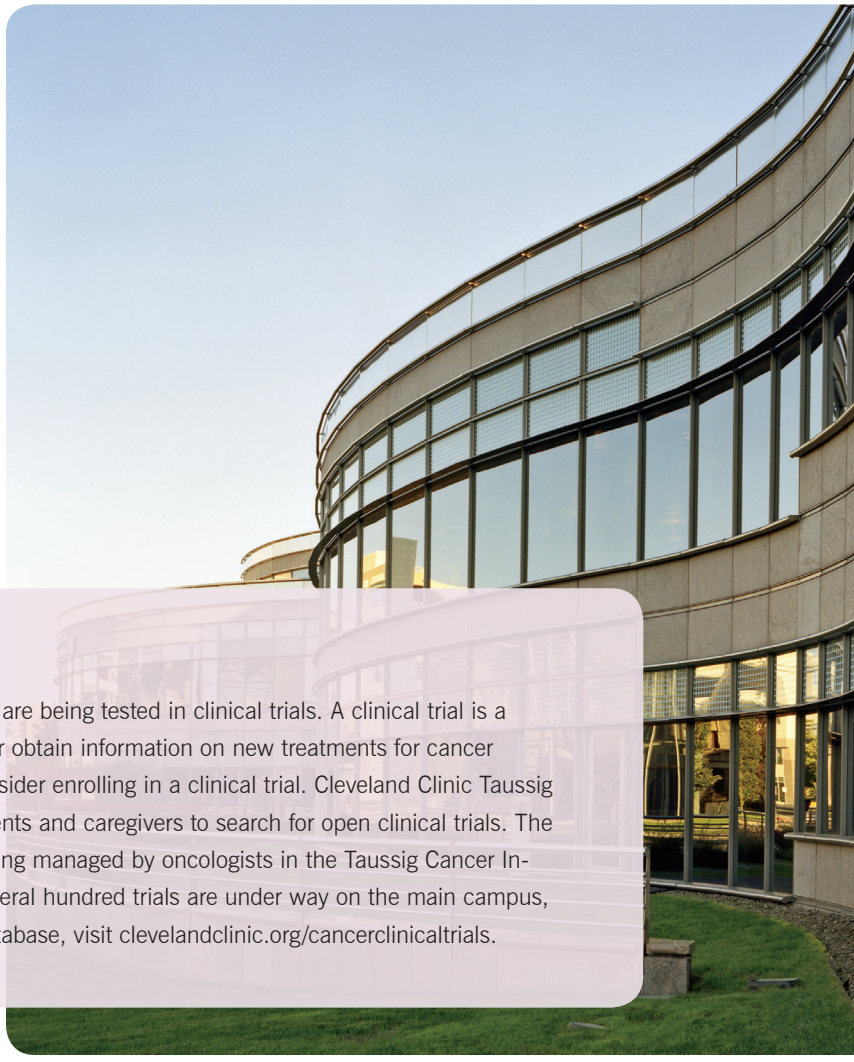
Bacillus Calmette-Guerin (BCG) is quite effective for treating high risk, non-muscle invasive bladder cancer. BCG, a vaccine derived from the bacteria that causes tuberculosis, is placed into the bladder. The body's immune system then responds to the cancer treatment and destroys bladder cancer cells. BCG is usually given once a week for six weeks. Sometimes long-term maintenance BCG therapy is given. BCG therapy is given only after transurethral resection of the tumor has been performed, and the bladder has then healed for at least two weeks.

Other intravesical therapies include interferon (immunotherapy) and mitomycin C (chemotherapy). Interferons are naturally occurring compounds that can help slow the growth of tumors. They are administered directly into the bladder through a catheter, just as BCG. Chemotherapy with mitomycin C also can be administered directly into the bladder. Chemotherapy works by affecting the DNA of any growing cancer cell. When given directly into the bladder as an intravesical therapy, chemotherapy won't reach other parts of the body, thus limiting the unwanted side effects that can occur with systemic chemotherapy.

Systemic chemotherapy uses drugs to kill cancer cells or stop them from dividing. Usually the drugs are given into the patient's vein. Once the drug enters the bloodstream, it will go to every place in the body, with the intent to kill any cancer cells. Chemotherapy is most commonly used once the cancer cells have spread beyond the bladder to distant organs (e.g. lungs or liver). However, there is evidence to suggest that giving chemotherapy before or after removal of the bladder may decrease the likelihood of the cancer spreading after surgery.

Your physician will decide if and when to use chemotherapy. Several different chemotherapy agents can be used. Most chemotherapy drugs in bladder cancer act similarly; however, they may differ in their side effects. Your physician will decide which chemotherapy agent is best for you after a careful discussion of the benefits and potential side effects these drugs may cause. While chemotherapy drugs kill cancer cells, they also damage some normal cells, which leads to the side effects. Side effects depend on the type of drugs used, the amount given and the length of treatment. Your physician will discuss side effects in detail with you.

Radiation therapy uses high-energy rays (such as X-rays) to kill cancer cells. It usually is delivered from the outside of the body (external beam radiation), and it is routinely performed as an outpatient treatment. It is usually given daily (each session lasting for approximately 20-25 minutes) for five to seven weeks. It also can be given with weekly low-dose chemotherapy with the goal of enhancing the killing effects of the radiation. For highly select bladder cancer patients, radiation therapy can be used in combination with chemotherapy as an organ-sparing alternative to surgery with similar results, though comparative data is limited. Radiation therapy alone also may be used as a treatment alternative for patients who are not medically suited for surgery, but it is slightly less effective than combination therapy.



Clinical Trials Provide Additional Treatment Options

Some bladder cancer treatments are standard and some are being tested in clinical trials. A clinical trial is a research study designed to improve current treatments or obtain information on new treatments for cancer patients. Before starting treatment, you may want to consider enrolling in a clinical trial. Cleveland Clinic Taussig Cancer Institute offers an online tool for physicians, patients and caregivers to search for open clinical trials. The web-based clinical trials database lists all of the trials being managed by oncologists in the Taussig Cancer Institute that are accepting patients. At any given time, several hundred trials are under way on the main campus, and at Hillcrest and Fairview hospitals. To search the database, visit clevelandclinic.org/cancerclinicaltrials.

To meet the growing demands of Cleveland Clinic's cancer care practice, the largest in Northeast Ohio, the 165,000-square-foot Taussig Cancer Institute was dedicated in 2000. The institute not only is a major cancer care center, but it houses and operates several research laboratories. This environment enables multidisciplinary cancer specialists and research scientists to develop new therapies and apply their benefits more rapidly to cancer patients.

Contacting Cleveland Clinic

Still have questions about bladder cancer?

If after reviewing this guide you have additional questions, Cleveland Clinic's Cancer Answer Line can help. Two oncology clinical nurse specialists and their staff can provide information and answer questions about cancer. The Cancer Answer Line is operational from 8 a.m. – 5 p.m., Monday – Friday. Please call **216.444.HOPE (4673)** or toll-free **866.223.8100.**

Ready to schedule an appointment with a bladder cancer specialist?

If you would like to set up a consultation with a Cleveland Clinic specialist, please call the Cancer Answer Line at **216.444.HOPE (4673)** or toll-free **866.223.8100.**

Services for Patients

Medical Concierge
Complimentary assistance for out-of-state patients and families. 800.223.2273, ext. 55580, or email medicalconcierge@ccf.org

Global Patient Services
Complimentary assistance for national and international patients and families. 001.216.444.8184 or visit clevelandclinic.org/gps

Remote Consults
Request a remote medical second opinion from Cleveland Clinic. MyConsult is particularly valuable for patients who wish to avoid the time and expense of travel. Visit clevelandclinic.org/myconsult, email eclevelandclinic@ccf.org or call 800.223.2273,ext 43223.

Locations

Bladder cancer specialists are available in the following locations:

Taussig Cancer Institute
Cleveland Clinic (Main Campus)
9500 Euclid Avenue / R35
Cleveland, OH 44195

Glickman Urological & Kidney Institute
Cleveland Clinic (Main Campus)
9500 Euclid Avenue / Q1-1
Cleveland, OH 44195

Beachwood Family Health and Surgery Center
26900 Cedar Road
Beachwood, OH 44122

Euclid Hospital
18901 Lake Shore Blvd.
Euclid, OH 44119

Fairview Hospital
18101 Lorain Ave.
Cleveland, OH 44111

Cleveland Clinic Florida
2950 Cleveland Clinic Blvd.
Weston, FL 33331

Hillcrest Hospital
6770 Mayfield Road
Mayfield Heights, OH 44124

Huron Hospital
13951 Terrace Road
East Cleveland, OH 44112

Independence Cancer Center
6100 West Creek Road
Independence, OH 44131

Independence Family Health Center
5001 Rockside Road
Crown Centre II
Independence, OH 44131

Lakewood Hospital
INA Building
14701 Detroit Ave.
Lakewood, OH 44107

Lorain Family Health and Surgery Center
5700 Cooper Foster Park Road
Lorain, OH 44053

Lutheran Hospital
1730 West 25th Street
Cleveland, OH 44113

Medina Hospital
1000 East Washington Street
Medina OH 44256

Parma Cancer Center
6525 Powers Blvd.
Parma, OH 44129

South Pointe Hospital
20000 Harvard Road
Warrensville Heights, OH 44122

Strongsville Family Health and Surgery Center
16761 South Park Center
Strongsville, OH 44136

Twinsburg Medical Offices
2365 Edison Blvd.
Twinsburg, OH 44087

Westlake Family Health Center
30033 Clemens Road
Westlake, OH 44145

Willoughby Hills Family Health Center
2570 SOM Center Road
Willoughby Hills, OH 44094

Wooster Family Health and Surgery Center
721 East Milltown Road
Wooster, OH 44691

Bladder Cancer Specialists

Anthony Avallone, MD
Glickman Urological & Kidney Institute

Ryan Berglund, MD
Glickman Urological & Kidney Institute

Steven Campbell, MD, PhD
Glickman Urological & Kidney Institute

Byron Coffman, MD
Taussig Cancer Institute

Robert Dreicer, MD
Taussig Cancer Institute

Amr Fergany, MD
Glickman Urological & Kidney Institute

Jorge Garcia, MD
Taussig Cancer Institute

Timothy Gilligan, MD
Taussig Cancer Institute

Michael Gong, MD, PhD
Glickman Urological & Kidney Institute

J. Stephen Jones, MD, FACS
Glickman Urological & Kidney Institute

Jihad Kaouk, MD
Glickman Urological & Kidney Institute

David Levy, MD
Glickman Urological & Kidney Institute

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Brian Rini, MD
Taussig Cancer Institute

Robert Stein, MD
Glickman Urological & Kidney Institute

Kevin Stephans, MD
Taussig Cancer Institute

Andrew Stephenson, MD
Glickman Urological & Kidney Institute

James Ulchaker, MD
Glickman Urological & Kidney Institute

For more information about our staff, including complete profiles, visit clevelandclinic.org/staff.

Every life deserves world class care.

9500 Euclid Avenue, Cleveland, OH 44195

Cleveland Clinic is a top-ranked nonprofit academic medical center founded in 1921. With more than 1,300 staffed beds, as well as research and education institutes, the organization is dedicated to providing expert inpatient and hospital care through innovation, quality, teamwork and service.