

UPDATES & INNOVATIONS

FALL/WINTER 2009



REPORTS AND BEST PRACTICES FROM ST. JOHN HEALTH SYSTEM

Welcome



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THIS ISSUE of *Updates and Innovations: Reports and Best Practices From St. John Health System* highlights advances in our admission process, new procedures and technologies that improve both diagnosis and treatment, and ongoing research for better outcomes conducted in our system and published in the nation's leading medical journals.

As always, we seek to provide clinicians in the community with a glimpse of the cutting-edge services available to them throughout our system.

In this issue, we explore our state-of-

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Direct Admit Enhances Care

Speeds patient admission and prevents information gaps



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PATIENTS WHO REQUIRE IMMEDIATE HOSPITALIZATION but are in stable condition benefit from a new, dramatically expedited route of admission.

You or your office staff can arrange direct admission (thus bypassing the emergency room and shortening the admission process) to any hospital in the St. John Health System by calling 888-MY-ADMIT or by logging on to www.stjohn.org/myadmit.

The automated telephone system prompts you to select your hospital of choice and directs you through the admitting procedure. Online, click on the "Direct Admit Office Guidelines" link to access a flowchart of steps. If your patient has chest pain, heart failure, pneumonia, or chronic obstructive pulmonary disease/asthma, select the standing order form specific for that condition. Otherwise, use the general order form. Simply print the appropriate form, fill it out, and fax it to the selected hospital (listed on the website). Forms are structured for maximum convenience and allow clinicians to concentrate on completing additional standing orders unique to the individual patient.

A key goal is to compile all pertinent patient information before admission—eg, special needs, primary insurance, authorizations, etc. Our instructions also request that patients bring important items, including insurance card, personal identification, and all medications. Maps and driving directions for patients are also available on the website.

When the telephone or online admission process is completed, hospital personnel are alerted to expect the patient's arrival. Valet parking and a personal escort to the registration area also speed the admission process. Once the patient's data are entered into the system, the escort walks the patient directly to his or her bed. Elapsed time from registration to entering the room typically is just 10 minutes. 

Welcome

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the-art services in neurosciences, managing patients who have a range of cerebrovascular diseases, including stroke, epilepsy, headache, spine disorders, brain tumors, craniofacial injury, balance and falls, or substance addiction. Our center provides high-precision diagnostic and, often, treatment by minimally invasive procedures.

Among the procedures detailed in this issue is new 4D CT technology to precisely target tumors, even those that move as the patient breathes.

Patients in our system often benefit from the many ongoing clinical trials in which we participate. This issue highlights current endeavors. One of our teams is evaluating a novel treatment for stage IV non-small cell lung cancer that combines two chemotherapeutic agents and a monoclonal antibody. The results of this therapy are very promising.

Another recent study evaluated a treatment for heart failure in women. These findings were published in the September 2009 issue of the prestigious peer-reviewed journal *Archives of Internal Medicine*. The investigators have also extrapolated their findings to create protocols that may ultimately improve long-term survival for women with heart failure.

Outpatient services are also important within our system's continuum of care, as demonstrated by our Parkinson's and Movement Disorders Clinic, in which a multidisciplinary approach to patient evaluation saves time while developing a comprehensive plan for each patient. 🏠

Van Elslander Neurosciences Center

State-of-the-art resources for accurate imaging, diagnosis, and, often, minimally invasive treatment



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THE NEW VAN ELSLANDER NEUROSCIENCES CENTER

at Providence Park Hospital in Novi introduces a program that serves as a springboard for developing advanced expertise and state-of-the-art patient care in neurology, neurosurgery, neuro-otology, pain management, physical medicine and rehabilitation, otorhinolaryngology, and craniofacial reconstruction. Growing out of the neurosciences team based at Providence Hospital in Southfield, and generously funded by Art Van Elslander, the endeavor at Providence Park Hospital brings important new resources to southeastern Michigan, including:

Primary Stroke Center. Having consistently demonstrated clinical proficiency that goes well beyond the standard of care, Providence Park Hospital has achieved advanced certification through the Joint Commission as a Primary Stroke Center. Our endovascular specialists and stroke neurologists manage not only all aspects of acute stroke but the full range of cerebrovascular diseases.

The Institute will soon install a biplane angiography imaging unit to provide advanced services for patients who have had a stroke or cerebral aneurysm. The unit's three-dimensional imaging enables specialists to execute

such high-precision procedures as targeting a clot with thrombolytic agents or retrieving a clot with minimally invasive techniques.

With telemedicine and robotics, we are also planning to extend our services in neurologic and neuroendovascular care for acute stroke patients to hospitals throughout the state.

Epilepsy monitoring unit. In this program, which is in development, our dedicated epileptologist will lead a team providing advanced services for patients with poorly controlled seizures of ill-defined origin. The team will work to isolate the cause and clearly define the disease process, thereby clarifying management choices, ranging from diet and medications to surgery.

Headache management. Our headache team provides individualized treatment for each patient, and explores in-depth the etiology of headaches that are unresponsive to conventional management. Innovative treatments such as botulinum toxin type A (Botox) injections are available.

Spine disorders. We offer minimally invasive laparoscopic spine surgeries as well as more extensive procedures. Patients with nerve compression due to lumbar spinal stenosis, for instance, may be candidates for implantation of the X-Stop device between the spinous processes and thereby avoid undergoing laminectomy or spinal fusion. Vertebroplasty and kyphoplasty can alleviate the debilitating pain associated with compression fractures of the vertebrae. Our biomechanical specialist uses nonsurgical approaches to address issues of the spine, and we are working more broadly to build a

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4D CT: Improved Treatment for Cancer Patients

Precisely targeting tumors for better outcomes



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ALTHOUGH RADIATION THERAPY is an integral component of most treatment protocols for thoracic and abdominal cancers, conventional techniques pose challenges, particularly with small growths. Tumors in these anatomic regions move during respiration, potentially leading to inaccurate dosing of the targeted lesion and unwanted irradiation of healthy tissue. At St. John Health System, advances in radiotherapy have solved these problems and have also permitted development of treatment alternatives for patients whose general health or tumor characteristics may preclude surgery.

A new dimension of treatment

Intensity-modulated radiation therapy (IMRT) allows technicians to reshape and vary the intensity of X-ray beams, focusing high-intensity portions of the beam on the most active parts of a tumor (as identified by positron emission tomography),

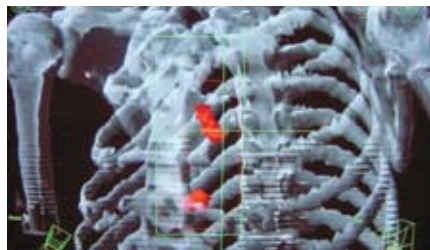


FIGURE 1. 3D conformal CT showing position and shape of a lung tumor (red area)

while directing lower-intensity beams elsewhere. By using a technique known as stereotactic body radiation therapy (SBRT), together with standard three-dimensional (3D) conformal computed tomography (CT), the technician can modify the beam to match the exact shape of the targeted tumor (**FIGURE 1**). Thus, a biologically potent dose of radiation can be delivered precisely. Typically, SBRT also requires fewer treatment sessions than does conventional radiotherapy.

What if the tumor is moving?

Conventional 3D CT accurately maps the shape of a tumor. However, during respiration, tumors may move on several planes: side to side, superior to inferior, and anterior to posterior. By manipulating the technology in the fourth dimension (time), we can irradiate the targeted tissue while it's in motion (**FIGURE 2**). This is because four-dimensional (4D) CT shows "snapshots" or animated movies of different phases of respiration. By carefully positioning and designing appropriate margins, the targeted tissue can be well controlled. Now we have a choice and can be proactive in overcoming these movements.

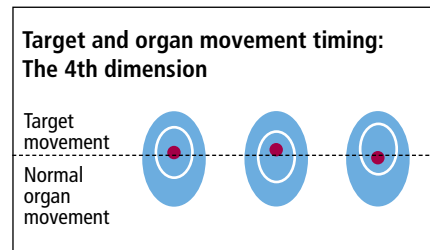


FIGURE 2. Tracking a tumor's motion helps define margins to protect surrounding healthy tissue

How we apply the technology in practice

4D CT enables us to track a tumor's movement and therefore target it more accurately, minimizing harm to normal tissue. In other words, we can now precisely map the total area a tumor will occupy throughout a respiratory cycle and improve targeting (**FIGURE 3**). Newer radiation protocols also include the use of gating, a well-known technique in other diagnostic or therapeutic areas, in which a monitoring device dictates the moment at which readings or scans are made. For example, in ECG-controlled imaging of the heart, multiple scans are taken at precisely the same moment in the cardiac cycle to create a "stop motion" picture of the heart.

During radiation for thoracic and abdominal tumors, patients cannot hold their breath long enough to receive the specified dose of radiation at a predetermined spot. And repeated breath holds cannot accurately reposition the tumor. The gating technique we use—image-guided radiation therapy (IGRT), a critical component of SBRT—provides computerized assistance to gauge the location of a tumor at every instance of a patient's respiratory cycle. The Varian Real-time Position Management system provides a graphic translation of the respiratory pattern and range of motion and then calculates the exact moments of the cycle at which the radiation beam must be switched on and off.

We reimagine the tumor frequently during the treatment session to improve precision in delivery of the planned radiation dose. Reimaging also compensates for possible setup errors—eg, slight deviations in positioning the patient.

What patients can expect

The duration of a single SBRT session is longer than with conventional radiotherapy—on average, 30 minutes

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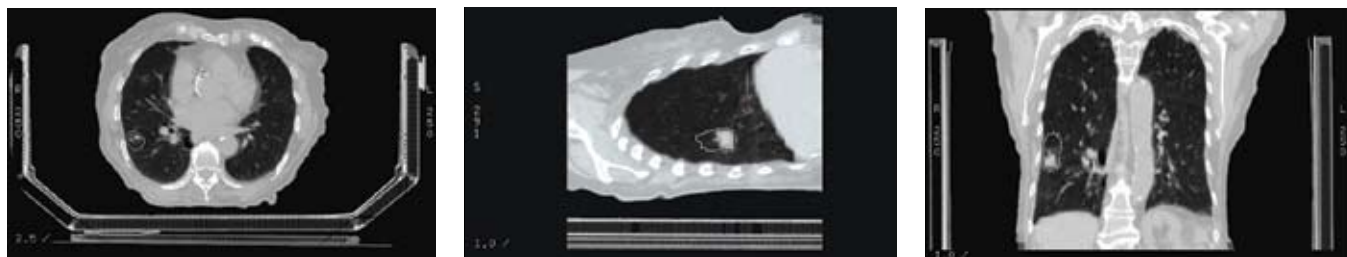


FIGURE 3. Axial, sagittal, and coronal scans of a tumor in a patient's right lung. In each of the views, when animated with 4D CT, the tumor will fill the entire outline during respiratory excursion. We can program the computer to turn the beam on and off during movement according to the treatment plan.

versus 15 minutes. However, because we can target tumors more precisely and deliver more rads per session, the total course of therapy is just three to five days, versus seven weeks for conventional treatment. This protocol

is particularly advantageous for treating small lung tumors.

Effectiveness. Using 4D CT with SBRT for early lung cancer, we have achieved local tumor control rates of greater than 90% without surgery. And

patients have exhibited no significant adverse effects. As we see more early-stage lung cancers treated with these methods, we will work toward entering the “fifth dimension” in cancer treatment—long-term cure. [↗](#)

Lung Cancer: Cross-specialty Collaboration Improves Care

Making appropriate treatment decisions in lieu of or in addition to surgery



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A COLLABORATIVE APPROACH to treatment is especially important for patients with locally advanced lung cancer, which is often not fully treatable by surgical resection. Combined chemo- and radiotherapies may be essential. To further collaboration among subspecialties such as medical oncology, radiation oncology, pulmonology, pathology, and surgery, Providence Cancer Center holds biweekly multidisciplinary conferences to discuss new patients and those who require new treatment decisions.

Collaborative approaches may include diagnostic, presurgical,

or postsurgical use of state-of-the-art radiation therapy, often in combination with other modalities or even in lieu of surgery.

Stereotactic and image-guided technologies enable delivery of very high doses of radiation to tightly demarcated areas, allowing for shorter courses of therapy and higher cure rates.

Video-assisted thoracoscopy obviates the need for open thoracotomy in procedures such as evacuating pleural effusion, sampling lymph nodes or other tissues, and excising localized tumors.

Endobronchial ultrasound-directed biopsy permits visualization and biopsy sampling of lymph nodes through the bronchus wall, greatly reducing the morbidity associated with older biopsy techniques.

In addition, a nurse navigator helps patients find their way through the health care system and

understand the complexities of their diagnostic and treatment plans.

Clinical trial enrollments

Providence Hospital participates in many clinical trials. Our clinical trials team of nurses and data managers helps patients learn of trials pertinent to their type of cancer and then enrolls them as appropriate.

We are conducting a phase 2 trial to test the safety of a novel treatment for stage IV non-small cell lung cancer. This treatment combines the chemotherapeutic agents carboplatin and gemcitabine with the monoclonal antibody bevacizumab. This trial has shown remarkably promising data. Patients tolerate the combination well, and none have experienced unexpected side effects from bevacizumab. There is no randomization in this trial, and we are still enrolling patients. [↗](#)

Parkinson's and Movement Disorders Clinic

Multidisciplinary consultations for referring primary care physicians




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PATIENTS WHO REPORT SYMPTOMS suggestive of possible Parkinson's disease can be referred to our clinic for a half-day evaluation by a neurologist, physiatrist, physical therapist, occupational therapist, speech pathologist, and social worker. A multidisciplinary assessment not only promotes a patient's well-being, our same-day process dramatically shortens what otherwise might be a protracted process, spanning weeks or even months and requiring patients to make multiple appointments with specialists at different sites.

We typically see patients within a month of the initial referral. The evaluation process accommodates up to four patients and begins at noon. Each patient begins the assessment with a different specialist. With this staggered approach to the evaluation, all patients meet individually with the full complement of specialists. Patients who may benefit from neurodiagnostic testing can also undergo such examination at our facility.

Our team reviews and discusses findings for each patient, and referring primary care physicians receive a detailed report with management recommendations within five business days of the examination.

We also collaborate with the Michigan Parkinson Foundation, a nonprofit organization, to conduct free onsite clinics throughout the state to evaluate patients and assist physicians in planning appropriate treatment. For more information on this program, go to <http://www.parkinsonsmi.org/initiative.asp>. 

For an appointment or for more information, please call the Parkinson's Disease and Movement Disorders Clinic at (313) 343-3073, Monday through Friday, 8 AM to 4 PM.

Van Elslander Neurosciences Center


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Center of Excellence addressing all musculoskeletal disorders. We also have an innovative pediatric spine program.

Brain tumor resection. Our team of neurosurgeons uses the latest endovascular surgical techniques to remove tumors and other masses in the brain. A broader integrative team of specialists is dedicated to accurate diagnosis and treatment options with radiation via the Trilogy system (see Fall 2009 issue, page 4) or with chemotherapy. Our neurosurgical training program educates residents and further enhances the depth of care for our patients, many of whom will be able to recover in the safety of our neurosciences intensive care unit, as needed.

Craniofacial program. Our renowned program receives referrals from around the world, for reconstructive surgery following acute trauma or excision of orbital and nasal tumors and for repair of congenital anomalies.

Neuro-otology. Otorhinolaryngologists who have received additional training in skull base surgery lead one of most active acoustic neuroma programs in the country, including a training program for fellows and residents. We are building a training lab for surgical and medical subspecialties, to educate caregivers locally and remotely and to create a generalizable template for educating physicians in advanced neuro-otologic care. We also have a balance and falls clinic to assess and treat patients who experience instability.

Addiction medicine. We partner with Brighton Hospital to address substance addiction, an issue for many in our community and region who can receive state-of-the-art care to assist with this serious illness. Through this affiliation we have increased access to cutting-edge imaging, medication expertise, and research opportunities. 

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Heart Failure: Benefits of Early Intervention

Results of the MADIT-CRT trial will change our management strategy



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BETWEEN 30% AND 50% OF PATIENTS

with heart failure have not just a weak heart muscle but an arrhythmic disorder, and nearly half of all heart failure patients die suddenly from arrhythmia. Even with optimal medication regimens, 25% of heart failure patients die within three years of diagnosis, and 50% within five years.

Implantable cardioverter defibrillators (ICDs) have been in use for more than 15 years to shock a heart that is beating irregularly back into a normal sinus rhythm. Newer devices for cardiac resynchronization therapy (CRT) additionally monitor heartbeat in patients with disordered electrical conduction and, as needed, synchronize the contractions of the heart's chambers.

Does CRT slow symptom progression?

The Multicenter Automatic Defibrillator Implantation Trial with

Dr. Pires has participated in nearly every major clinical trial on cardiac pacing and has published extensively on the electrophysiologic aspects of heart disease, including a chapter in Cardiac Resynchronization Therapy in Heart Failure, a much anticipated book written by several leading experts in the treatment of heart failure.

Cardiac Resynchronization Therapy (MADIT-CRT), conducted with nearly 2,000 patients, was designed to test whether CRT could slow the progression of symptoms among high-risk patients with early heart failure (New York Heart Association [NYHA] I or II classification) and reduce mortality or adverse events (eg, hospitalizations). St. John Hospital & Medical Center was a key participant in this study. At its first endpoint, the trial showed that prophylactic CRT reduced mortality or events by 30%, compared with ICD use alone. Importantly, CRT did not worsen any patients' conditions, as sometimes happens in clinical trials. The investigators anticipate that the study's full results will be published in 2010.

Currently, only patients with severe heart failure (NYHA III or IV) qualify for CRT. However,

The Heart Rhythm Center at St. John Hospital & Medical Center

For many years, our center has been a leader in providing state-of-the-art treatment for all types of heart rhythm disorders and heart failure. Our staff of dedicated and experienced heart rhythm disorder specialists performs more than 2,200 procedures annually, including hundreds of catheter ablations for complex arrhythmias such as atrial fibrillation. Through an active clinical research program, the center has also pioneered many of the latest forms of treatment, thereby enhancing the care of our patients.

when American Heart Association/American College of Cardiology guidelines are next revised, they will likely include an indication for CRT in patients with less severe disease. This may have significant implications for patient management: Approximately 70% of heart failure patients in the United States have less severe heart failure. In total, approximately 5.5 million individuals in the United States have some form of heart failure. [↗](#)

A new trial opportunity for patients

Among patients who have an implanted defibrillator, half can receive painful shocks due to inappropriate activation when the device senses a rhythm disturbance that turns out to be nonlethal. The Multicenter Automatic Defibrillator Implantation Trial—Reduce Inappropriate Therapy (MADIT-RIT) will randomly assign patients older than 21 years who meet current guidelines for dual-chamber ICD or CRT defibrillator therapy to be fitted with one of the following: standard ICD programming; or novel programming that sets a higher cutoff for the arrhythmia rate before firing, or allows for a longer period in which to detect tachycardia before firing. The primary outcome being measured is time to the first inappropriate activation. We have just begun to recruit patients. The estimated date of completion is September 2011.

Providence Study Finds ICDs May Lack Benefit for Women with Heart Failure

Findings published in *Archives of Internal Medicine*



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RESEARCHERS AT PROVIDENCE HOSPITAL

recently examined the efficacy of implantable cardioverter defibrillators (ICDs) in women who have heart failure. In addition to medication, treatment for heart failure generally includes implanting an ICD to prevent sudden cardiac death. This therapy is supported by numerous clinical trials enrolling predominantly male populations.

Results of our research

When we looked specifically at the effects of ICDs in women with heart failure, however, we found that there was no statistically significant benefit for patients who received an ICD, compared with women who were treated with medical therapy. These findings were published in the September 2009 issue of the *Archives of Internal Medicine*, one of the *JAMA/Archives* journals. Our research is briefly described below.

Study parameters. Our investigation included identification of relevant trials using a MEDLINE database search from January 1950 to week four of September 2008. The search found five trials that enrolled a total of 3,810 men and 934 women with heart failure. Our analysis concluded that ICDs save lives; however, the ratio of benefit to risk may be different for men and women.

Gender variables in heart failure treatment. Most clinicians agree that more research is needed; specifically, more women should be included in new studies. In addition, we must determine the exact subset of women who are appropriate for inclusion in these investigations. Our study points out that there exists a gender difference in response to the use of ICDs.

Study results. The pooled data analysis did not demonstrate a statistically significant decrease in mortality in women with heart failure and reduced left ventricular ejection fraction who received ICDs for primary prevention of sudden cardiac death (SCD), compared with medical therapy. All trials used intent-to-treat analyses; in most cases, the investigators provided detailed accounting of dropouts and crossovers.

Implications for patient care

From this research, we can also cite some important implications. For instance, the ICD does make a major difference in the immediate quality of life for those women who undergo the procedure. In this broader context, it would seem that women in heart failure should have an ICD implanted. In fact, there are presently no other treatments shown to be as good for women in heart failure, including: nitrates, angiotensin-converting enzyme inhibitors, digoxin, and beta-blockers. For sudden cardiac death, the ICD works well for women, but when overall mortality is evaluated, ICDs are less effective.

A need for more research

One of the chief benefits of the Providence Hospital ICD study on women is that it encourages more studies to be done in this area of medicine. As an electrophysiologist, I see more patients in heart failure, more success stories, more complications, and more psychosocial fears of ICDs.

In the final analysis, the Providence Hospital research study on the effectiveness of ICDs on women in heart failure revealed a great deal of new information and will in the long run help pave the way for future studies and new ways to treat patients. [↗](#)

Improving our research focus

It is estimated that approximately 300,000 people in the United States die each year from heart failure. An estimated 5.7 million Americans are living with the condition and 670,000 new cases are diagnosed each year, according to the American Heart Association.

Years ago, the statistics were less alarming, but we still struggled to properly treat those with heart problems. ICDs have been in use since 1988, but until recently, only those patients who survived cardiac arrest received an ICD.

Fortunately, medical treatments improved and adapted, saving thousands of patients' lives in the process. By making better choices for research candidates, we will be able to better select candidates for the ICD itself.



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A PASSION *for* HEALING

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