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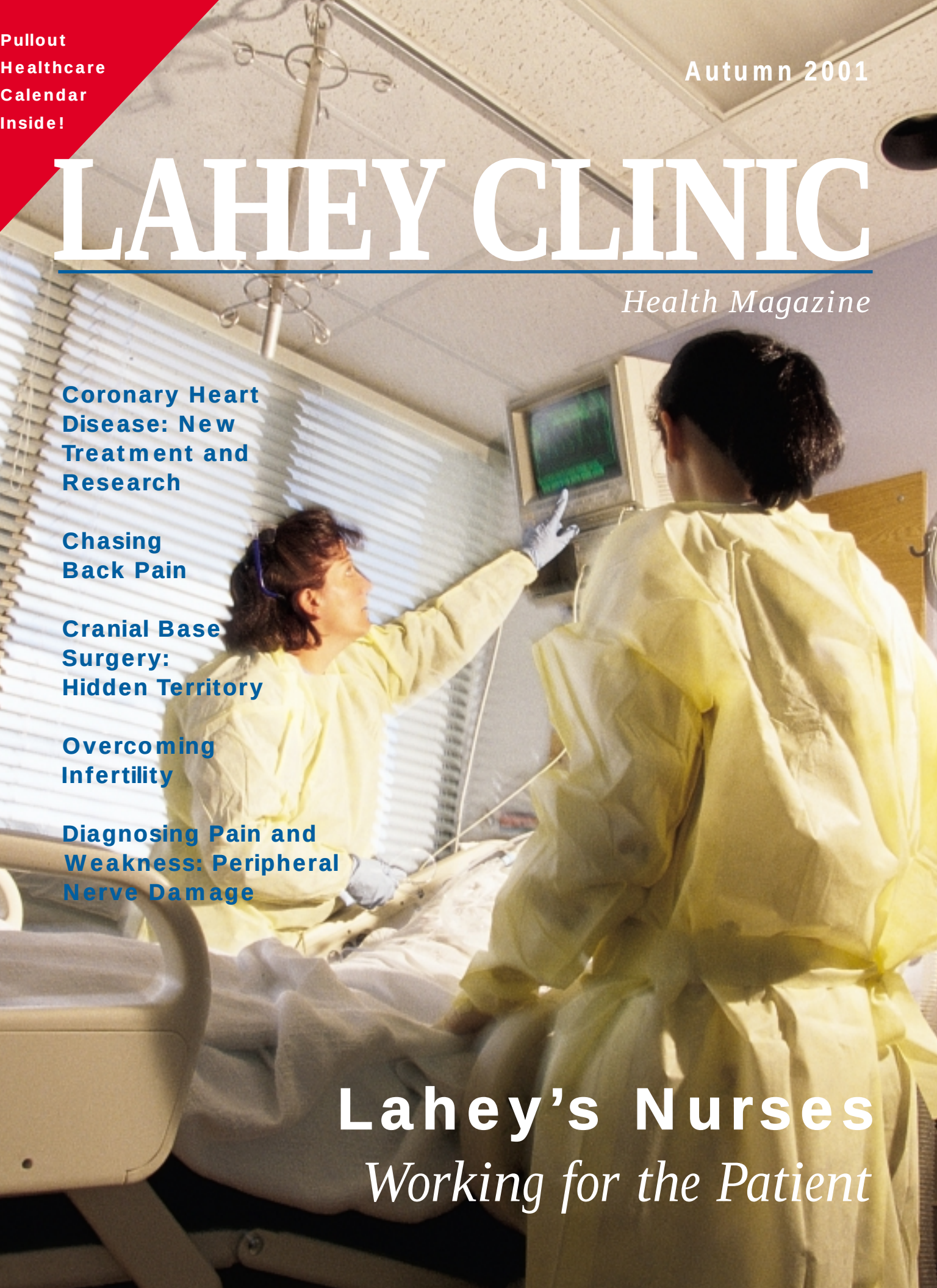
Autumn 2001

LAHEY CLINIC

Health Magazine



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Working for the Patient

Lahey CLINIC

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On the Cover: *In the Medical Intensive Care Unit, Susan Bushey, RN, and Meetal Vaidya, nursing assistant, wear disposable, protective gowns to care for a patient in isolation. Lahey's 800-strong nursing staff is a key element in providing quality care to patients.*

Lahey Clinic's Nurses

Working for the Patient

Helping patients walk as part of their recovery from surgery is one nursing activity. Here, med/surg nurse Terry Ravelo, RN, works with a heart surgery patient.

If Patti Belinsky had one of those novelty license plates on her car, like the ones people have about fishing or golfing or sailing, it would read: "I'd Rather Be Nursing."

"I love being a nurse," she says, after 20 years as a registered nurse, 16 of them at Lahey Clinic Medical Center, where she is assistant nurse manager on the 6-East hospital unit. "I became a nurse because I liked helping people, and I still love being able to help them through their difficult times."

For Operating Room nurse Dan Johnson, RN, a key issue is the nurse's role as a patient advocate. "Patients need to feel comfortable that there's someone there taking care of them while they're in such vulnerable situations," he says. "Their clothes have been taken away, they're under anesthesia, they have no control. If you didn't remember that under all the drapes and instruments there's a human being there, then it wouldn't be nursing. I don't work for the surgeon. I work for the patient."

For Medical Intensive Care Unit nurse Jennifer Boucher, RN, it's the teamwork that stands out. "Our patients are critically ill with problems that require continual monitoring, intense technological and emotional support. Very high stress. It's the people who keep it together. Everyone works together, everyone works as a team."

This has been a year of news stories about nurses, usually in terms of staffing shortages, concerns about nurse/patient ratios, mandatory overtime shifts. But at Lahey the picture has been much brighter.

The backbone of care

"Lahey Clinic is blessed in the quality of its nursing staff—both in professional skills and in dedication to caring for those who seek our help," says Lahey Chief Executive Officer David M. Barrett, MD. "It's often the physician who gets the glory for a new therapy or a surgical technique. Therapists, technologists and others play essential roles. But it's the people who work in the nursing environment—nursing assistants, unit coordinators, secretaries, housekeeping and dietary staff—who are the backbone of quality patient care."

Lahey Clinic is dedicated to creating an environment where nurses can flourish, says Chief Nursing Officer Kathleen Jose, RN, MSN. Opportunities for professional growth, educational opportunities and a voice in the philosophies and protocols of nursing care are among many factors that contribute to this goal.

"We seek to foster a supportive situation," she says, "from administration on down, so that our nursing staff can focus on the mission that draws them into the profession in the first place—taking care of patients, and doing it well."

As a quaternary care institution—providing complex services up to and including kidney and liver transplants—Lahey offers a wide range of inpatient and outpatient nursing roles: traditional medical/surgical ("med/surg") inpatient floors; the Post-Anesthesia Care Unit (the "recovery room"); Medical, Surgical and

In the Medical Intensive Care Unit, Mary Ellen Burbank, RN, takes part in twice-daily patient rounds in which medical staff, residents, nurses, pharmacists and others evaluate each patient and refine treatment plans.

Coronary Intensive Care Units; the Emergency Medicine Department; the Operating Room; outpatient clinics and specialty units like Endoscopy and Chemotherapy Infusion; and community practices in more than a dozen towns in eastern Massachusetts.

Patient/nurse ratio is good

Nursing care covers a wide territory depending on unit focus and even the patient's diagnosis. Says med/surg nurse Christine Gamez, RN, a medical/surgical hospital unit such as hers sees a preponderance of cardiothoracic and other surgical cases. Nurses there deal with incisions and wound care issues, oxygen and medication needs, washing patients, helping them get out of bed and return to mobility, and teaching them and their families about self-care once they leave the hospital. With four to five patients per nurse, the ratio is good for these types of patients, she says.

In the Medical Intensive Care Unit, says Jennifer Demone, RN, the patients are far sicker and the outcomes different than on the medical/surgical floors. A critical care nurse cares for one to two patients, and deals with them much more closely. With patients who may have strokes, pneumonia, serious pulmonary problems, or liver disease, nurses encounter multiple problems, often whole body systems. They are constantly assessing, drawing lab specimens, starting intravenous medications, suctioning, as well as performing the duties of a medical/surgical nurse. Family involvement is important here, also, although patients usually are more likely to be transferred to other units rather than discharged home.

Sicker, but educated, patients

Says Ann Killilea, RN, nurse manager on the 6-East hospital unit, nursing has changed considerably since she entered the profession 24 years ago. "Before," she says, "in the days when people could be admitted for tests or observation prior to surgery, we had a mix of serious and not-so-serious cases.

"Now, with managed care and Medicare reimbursement restrictions," she says, "the patients we see in the inpatient setting all tend to have much more severe problems. And nurses' skill sets have had to change accordingly. They're a cross between MIT engineers and jugglers. It's much more demanding and increasingly stressful.

"Patients today are more educated," Killilea adds. "When they come in, they're likely to have researched their medical problems on the Internet. They've read about staffing shortages and they ask about patient-to-nurse ratios."

They can also be more skeptical. "Patients and their families are sometimes frustrated and distrustful of the health-care system," Killilea says. "The staff nurse's challenge is to quickly regain that trust and maximize the time spent with a patient. The often-shortened length of stay can be very difficult for both the patient and family caring for them upon discharge."

Adds med/surg nurse Denise Prisby, RN, "Patients who complain a lot usually have multiple issues. They focus on the soap or the food because it's something they can grasp onto. Most often, the person on the receiving end is the nurse, who's friendly and safe."

How does one deal with this? "There's always something you can do to help them feel better," Prisby says. "If their food is cold, you can heat it up in the microwave. Or perhaps you need to help them with the television controls. I try to talk to them and develop a relationship with them. This usually opens them up."

Protecting autonomy

"When people are admitted into a hospital," says Belinsky, "they lose control. They feel very vulnerable. We try to give them as much autonomy as possible, and as normal a routine as possible. For example, most healthy people don't eat breakfast in bed, so we try to get patients up for meals.

"This is important," she adds, "because these days we keep them here for such short periods. It's also important to try to involve the whole family, because they may have major responsibilities as caregivers once the patient's discharged."

Says Killilea, "The nurses here are willing to work hard, and they do work hard. The key factor is that they can go home and understand that they've done a good job."

Nursing at Lahey

A key issue in the quality of nursing care is the nurse-to-patient ratio, which at Lahey is reviewed and revised as needed, says Chief Nursing Officer Kathleen Jose, RN, MSN. "Our staff turnover is very low, about 10 percent at present," Jose says. "That lets us maintain ideal nurse/patient ratios."

Nurse/patient ratios vary depending on the nature of the unit—one or two patients to each nurse on critical care floors, four to six patients to each nurse on medical/surgical floors. "In addition, nursing assistants complement the RNs to assist in providing the best care possible," Jose says.

Other factors in Lahey's nursing excellence include philosophy, clinical opportunities, educational programs, compensation, even geography:

Philosophy

"We seek to foster an environment that emphasizes patient-centered care," Jose says. "Our focus is on continually assessing the needs of patients, and developing and implementing treatment plans that will meet their medical and psychological needs."

Clinical practice

The nature of Lahey's practice of medicine brings with it both professional challenges and opportunities for professional growth for nurses and physicians alike—a broad range of diverse, complex diseases and challenging cases. Lahey is in the forefront of medical expertise in such areas as cardiovascular medicine and cardiac surgery, cancer diagnosis and treatment, neurosciences, orthopaedic surgery, otolaryngology, respiratory diseases, digestive tract diseases, urological problems and kidney and liver transplantation.

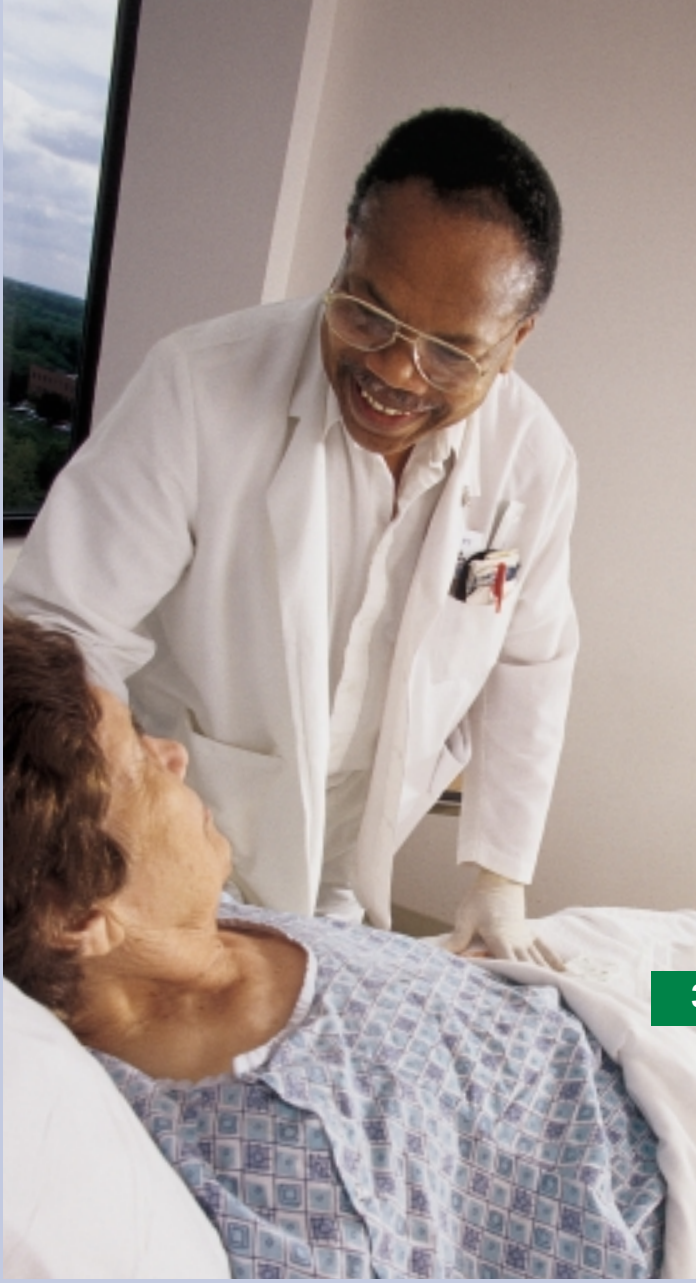
Currently, more than 200 medical research protocols are under way at Lahey. And, in addition to operating residency and fellowship training programs for more than 100 young physicians in 25 specialties, Lahey is a teaching hospital affiliated with Tufts University School of Medicine. Several schools of nursing train students at Lahey Clinic Medical Center.

Compensation

Despite its suburban location, Lahey Clinic Medical Center is a teaching hospital providing academic-level medicine. Its salary levels are competitive with the downtown teaching hospitals. "And we don't have mandatory overtime," Jose notes.

Professional growth

Within the nursing staff, Lahey offers significant growth opportunities, with nursing positions in the full range of clinical specialty and subspecialties.



IV Team nurse Robbie Roberts, RN, inserts an intravenous line on a patient scheduled for a test.

Educational opportunities

Lahey offers its nurses continuing education opportunities through an active Nursing Education Department, on-unit nurse educators, on-site educational programs at no expense and other benefits. These include a collaboration with Regis College to provide on-site degree programs and a low-interest education loan "forgiveness" program.

Geography

With its practice of academic-level medicine in a suburban location, Lahey Clinic Medical Center is easily accessible from Route 128/I-95, and parking is free and convenient. (And it's next to the mall.)

Touching a Nerve

Diagnosing Peripheral Neuropathy

Nerve conduction tests can pinpoint where damage has occurred in a nerve. Here, neurologist Ted Burns, MD, performs an electromyogram (EMG).

"I first noticed it one morning about three years ago while playing golf," says Bill C., 63, of upstate New York. "There was weakness and a lack of control in my ankles and feet. I wasn't in pain, but I seemed to be working hard just to walk."

That is how Bill (not his real name) describes his first encounter with peripheral neuropathy, a disorder that commonly causes weakness or loss of sensation in the extremities. For this otherwise healthy, active executive, a frustrating round of golf led to a long process of diagnostic tests and symptoms that at various times caused falls and fatigue.

Peripheral neuropathy is defined as damage to one or more peripheral nerves, which include any nerves outside of the brain and spinal cord. Approximately 1 percent of the population is estimated to have some form of the disorder.

"While peripheral neuropathy is frequently linked to a chronic condition such as diabetes or arthritis, that is not always the case," says Lahey neurologist Ted Burns, MD. "There are well over 100 different causes."

Hunting for clues

Acquired peripheral neuropathy is the result of an underlying condition such as diabetes, vasculitis, Lyme disease or inflammation. *Inherited* peripheral neuropathy is caused by a genetic mutation. Burns estimates that between one-quarter and one-third of cases are inherited, while nearly one-third are *idiopathic*, meaning no known cause can be determined.

That brings us back to Bill. He has no chronic diseases and had suffered no trauma, so his doctors in New York performed blood tests, X-rays, even MRI and CT scans, which, he says, "came back clean as a whistle."

Two summers passed, and although he continued to work and pursue his leisure activities—golf and sailing in summer, skiing in winter—he experienced symptoms in varying degrees. "It would come and go," he says. "It progressed slightly, and I'd get tired easily."

Earlier this year he traveled to Lahey for an appointment with Burns and more diagnostic testing.

"The first step in diagnosing peripheral neuropathy is to characterize the type," says Burns. "Peripheral nerves have either sensory, motor or autonomic function."

Sensory nerves transmit sensations such as temperature, touch, or joint position. Neuropathy involving sensory nerves might be characterized by numbness, tingling, burning pain or tightness.

Motor nerves contain fibers that send signals to the muscles that cause them to contract. Weakness is the chief characteristic of neuropathy involving motor nerves.

Autonomic nerves control involuntary functions, such as heart rate, blood pressure, sweating and digestion. Neuropathy involving autonomic nerves is less common than sensory-motor neuropathy, and symptoms may be as vague as lightheadedness.

Neurologists have multiple tools available to help characterize the neuropathy and, possibly, determine the cause.

Collaboration Is Key

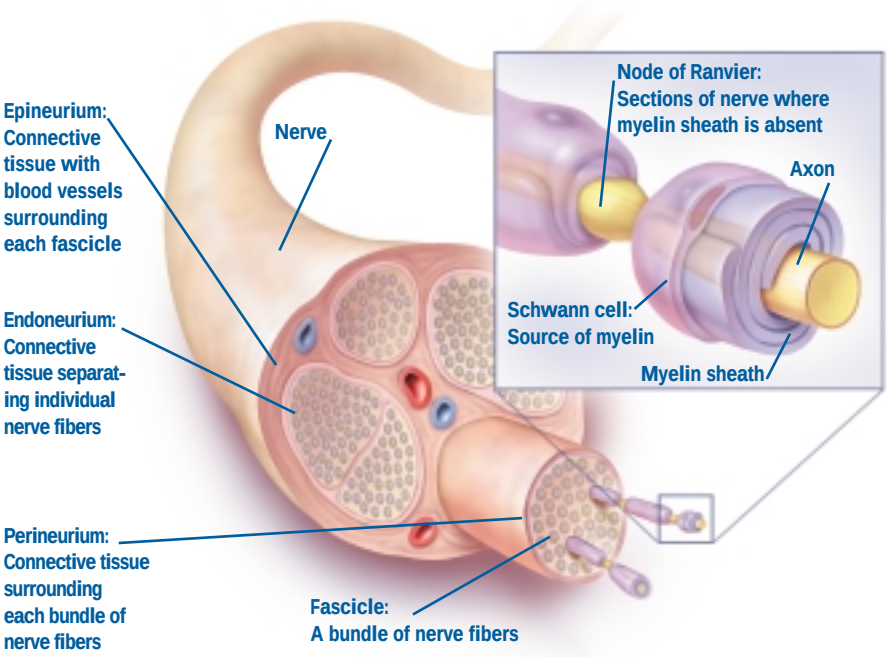
Numerous conditions can lead to peripheral neuropathy, so diagnosis and treatment often require close collaboration between specialists. Some of the most common causes of neuropathy involve chronic underlying disease:

Diabetes: Chronically high blood sugars can damage nerves, especially those affecting sensory function in the hands and feet. If diabetes is the cause of peripheral neuropathy, the patient and his or her physician may need to step up treatment to bring blood sugars under control.

Hepatitis C: Patients with hepatitis C are susceptible to a condition known as cryoglobulinemia, an abnormal protein in the blood that causes neuropathy. Neurologists and hepatologists at Lahey work together to assess patients with this condition. "We have a pretty good idea about how to monitor and treat hepatitis C," says neurologist Ted Burns, MD, "but we are still trying to sort out the best way to treat cryoglobulinemic neuropathy."

Vasculitis: If vasculitis—inflammation of blood vessels—is shown to be causing neuropathy, rheumatologists may treat the condition with immunotherapy.

Monoclonal protein: According to Burns, 3 percent of people over age 70 have a monoclonal protein present in the blood, which may be associated with neuropathy. Hematologists are often consulted in these cases to determine whether treatment would be beneficial.



Peripheral nerves are a complex of connective tissue, cells and nerve fibers. Two parts susceptible to damage are the axon—the long nerve fiber—and the myelin sheath, which surrounds the axon and facilitates transmission of nerve impulses.

Important information can be obtained from a detailed history of symptoms and an examination to measure strength, sensation, reflexes and coordination.

EMG, or nerve conduction tests, measure how quickly a static shock travels up and down the nerve. "This test can help us determine where along the length of the nerve the damage occurs and whether it predominantly affects sensory or motor function," says Burns.

Quantitative sensory testing assesses neural response to sensations such as vibration and temperature. A computer program reports the results as a percentile score that is matched for age, sex, height and weight to determine the patient's threshold of sensation.

"This is a good way to follow patients with predominantly sensory neuropathy," says Burns. "We often use it to monitor progress of patients on drug therapy."

Autonomic testing involves painless, noninvasive tests that measure, for example, how the heart rate responds to different breathing maneuvers. "If autonomic nerves are involved, it generally narrows the list of possible causes," says Burns. Guillain-Barre´ syndrome is one example of an underlying disease that might cause neuropathy of the autonomic nerves.

Treatment options

Treating peripheral neuropathy is often a two-step process. If an underlying cause can be determined, the first line of treatment is to bring that condition under control. For example, vasculitis, an inflammation of blood vessels, would be treated with immunotherapy, such as steroids.

"The second type of treatment is symptomatic treatment," says Burns. "We try to treat pain with aspirin, acetaminophen, anticonvulsants or tricyclic antidepressants. But it is important to explain to patients that this type of medication is for relief of symptoms only—it won't 'cure' the neuropathy."

In Bill's case, Burns prescribed prednisone to combat a defect of the immune system that is affecting part of his nerves. "The hope is that the steroid treatment will calm the immune system and lessen the degree of immune-mediated attack to the myelin sheath," says Burns. "I have observed an improvement in strength in his lower extremities since initiating this treatment."

Bill has noticed the improvement as well. "I had been waking up feeling terrible. I had forgotten what it was like to have a good night's sleep, and that has improved," he says. "I played golf this weekend, and it was all right."

"It is important for patients to understand what neuropathy means, to recognize the underlying cause, and to know what to expect for the future," says Burns.

For an appointment with a neurologist, call 781-744-3250. For additional information, see the neuroscience web site: www.lahey.org/neuroscience

Clinical Trial:

Diabetic Amyotrophy

Lahey Clinic's Department of Neurology has joined Mayo Clinic in Rochester, Minn., in a randomized, controlled, clinical trial testing the effectiveness of steroid treatment on a type of peripheral neuropathy known as diabetic amyotrophy. Lahey is the only center in New England involved in this study.

Diabetic amyotrophy strikes suddenly, causing pain in the thigh, hip and buttocks. It frequently begins on one side and spreads to the other, producing severe pain and weakness in the knees and legs.

"Unlike the more common diabetic distal neuropathy, which is caused by damage to the nerves from chronic high blood sugar, diabetic amyotrophy may be caused by inflammation," says Ted Burns, MD. The study is testing the effectiveness of an intravenous steroid known as methylprednisolone.

"Diabetic amyotrophy is something we've known about for years, but there was no treatment other than trying to relieve the pain," he adds. "Within the next several years, the results of this trial should help us determine if this treatment hastens and improves recovery."

For information, call the Department of Neurology at 781-744-8630.

Total Couple Care

The Center for Reproductive Medicine

"I still look at him and I can't believe it," says Jane of her healthy, 8-month-old son. "We had waited such a long time."

Jane and her husband, Jim (not their real names), were both in their early 30s when they started trying to conceive a baby. "I have a child from my first marriage, so I knew I could get pregnant," she says. "But we tried for about a year with no luck."

Jane's primary care physician referred the couple to the Center for Reproductive Medicine, based at Lahey Clinic Northshore in Peabody, where both partners had tests to assess their reproductive health. Today, they are proud parents.

"It took over a year," says Jane. "We were very happy that we could do everything at one site."

Maximizing potential

"Having a strong fertility center is important to providing comprehensive healthcare," says Robert McLellan, MD, chair of Lahey's Department of Gynecology. "Fifteen percent of couples seek medical evaluation for infertility at some point. That is a large subset of our community."

Lahey's group practice structure enables the center to integrate the related specialties of reproductive endocrinology, urology, gynecology, sexual dysfunction and laboratory medicine. "We take patients from initial consultation, all the way to in-vitro fertilization if necessary," says McLellan.

As director of reproductive endocrinology, Carol A. Anania, MD, a board-certified reproductive endocrinologist and gynecologist, coordinates female infertility treatment, while Margaret J. Vereb, MD, a urologist, directs the center's male infertility program. In-vitro fertilization (IVF) is provided in collaboration with other area fertility treatment centers for couples who do not achieve pregnancy through other treatment.

"One of our greatest strengths is the personal attention we give our patients," says Anania.

"We maximize a couple's potential in the least invasive way possible," says Vereb. "It's important to tell infertile couples when there is hope."

Knowing the odds

Infertility is broadly defined as failure to achieve a pregnancy after 12 months of unprotected intercourse. "In general, 15 percent of couples at the end of 12 months don't have a pregnancy," says Anania. "In the second year, 50 percent of those will conceive on their own." *(See sidebar.)*

One exception to this definition is age. "If a woman is over 35, we tell the couple to wait only six months before seeking help. If she is over 40, we urge them to come in soon after they start trying," Anania says. Age is the single hardest factor to overcome with female infertility, because as a woman ages, the number and quality of her eggs diminishes.

"But we see a full range of ages," says Anania. "Anything can impact fertility: stress, prior illness or surgeries, emotions. In men, problems can be traced to chemical exposure, childhood mumps, or an undescended testicle, for example."

Infertility problems are fairly evenly split, with an estimated 40 percent attributed to male factors, 40 percent to female factors and 20 percent to combined factors.

His . . .

"Semen analysis may be an appropriate place for the male partner to start, because it is so simple compared to the tests a woman may have to go through," says Vereb. "In fact, though we encourage couples to come in and talk first, men can have a semen analysis without a physical exam first."

Primary care physicians can order a semen analysis, which is

"A lot of what we do is education," says Carol A. Anania, MD. "It is crucial that couples understand the process and participate in the treatment decisions."

done on site at the center. "I review every specimen that comes through the andrology lab," says Vereb. "A well-performed semen analysis can determine subtle problems as well as information such as sperm count, motility and structure."

Among the factors that can cause male infertility are varicocele, obstruction and antisperm antibodies. Varicocele is enlargement of a vein in the scrotum, which causes the temperature of the scrotum to rise and leads to a decrease in sperm production. It can often be repaired through a minor surgical procedure.

Infection, trauma or a congenital defect can cause obstruction in the ejaculatory duct, which can also usually be repaired through outpatient surgery. When obstruction occurs in the epididymis, a tightly coiled tube in the scrotum where sperm mature, a more complex surgery may be necessary.

"About 3 percent of cases are immunologic—related to antisperm antibodies," says Vereb. "We would test for this if there is a history of trauma or infection or if we find no other cause of infertility."

Because sperm cells are immunologically different from other cells in the body, infection-fighting white blood cells would regard them as "foreign" if they were to mix with the blood. Sperm cells develop in the testes and are kept separate from the blood by a tight junction of cells known as the blood-testis barrier. If there is a break in this barrier, the blood begins to produce antibodies to protect against the unknown cells. Even if the break repairs itself, once the antibodies are present in the blood, they also occur in other fluids, including semen. The antibodies affect sperm motility and the sperm's ability to bind with an egg.

"Essentially, this is an allergy against sperm," says Vereb. "Our options are to treat it with steroid medication to drop the titres of the antibody, or to try sperm washing followed by intrauterine insemination."

Hormonal dysfunction is a common cause of infertility in men that can be diagnosed through physical exam, blood tests and semen analysis. "Depending upon the degree of abnormality, we could administer hormones with pills or shots," says Vereb. "We then re-evaluate after three months to see if there has been improvement."

Nature's Way

Even with normal conception, couples have only about a 20 percent chance of conceiving each month. A series of events must take place before successful conception and subsequent pregnancy can occur.

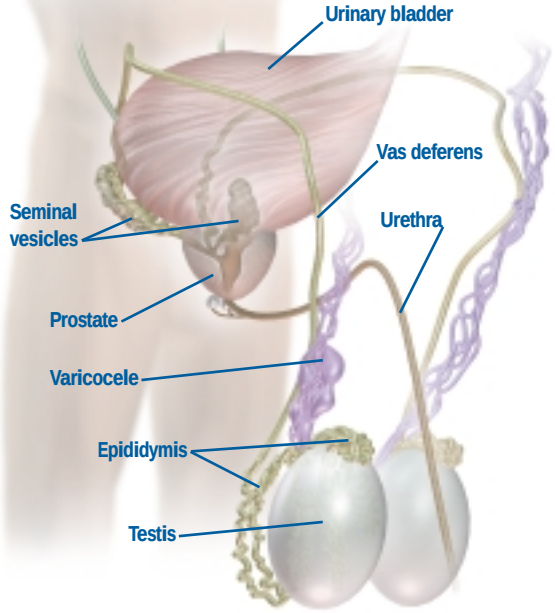
Sperm is made in the testes, matures in the epididymis, and is stored in the vas deferens (*see illustration A*). During sexual intercourse, sperm mixes with fluids from the seminal vesicles and the prostate gland to form the ejaculate.

At ejaculation, millions of sperm are released near the woman's cervix (*see illustration B*). These sperm swim through the cervix into the uterine cavity, then up into the fallopian tube to the vicinity of the ovary.

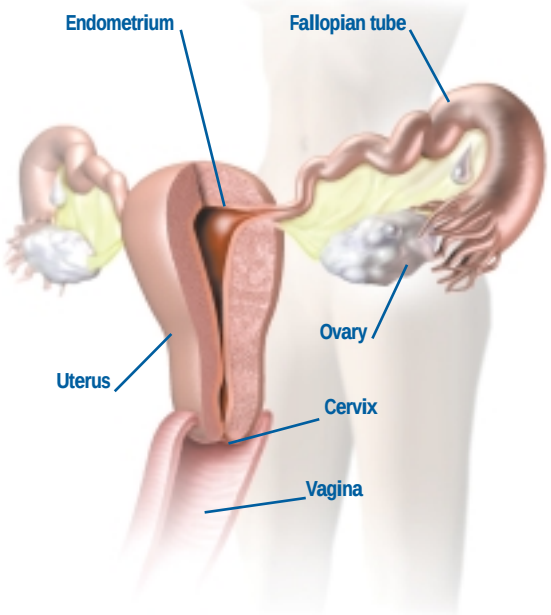
Approximately half-way through a woman's cycle, a mature egg is released through the wall of the ovary (a process known as ovulation). Conception occurs when a healthy sperm cell penetrates the mature egg (or ovum). The fertilized egg then travels down the fallopian tube to the uterine cavity, arriving approximately three or four days following conception. By this time the fertilized egg has divided several times and is a microscopic embryo.

Approximately six days following conception, the embryo searches for nutritional support so it can continue to grow. By that time, the right combination and balance of hormones secreted into the woman's bloodstream has prepared the endometrium—the special tissue lining the uterus—to receive the embryo. The endometrium is thick and has adequate blood supply to permit the embryo to implant into its wall, which serves as the embryo's source of nutrition.

Eventually, with further growth, a placenta develops to support the growing embryo and fetus with blood, oxygen and nutrients from the mother.



(A) Male reproductive system



(B) Female reproductive system

"Medical treatment for infertility has come a long way," says Margaret J. Vereb, MD.

. . . And hers

"The vast majority of infertility cases in women are related to ovulation problems," says Anania. Ovulation, the release of an egg from the ovary, can be affected by hormonal imbalances or by excess weight (30 percent over ideal body weight). Infertility evaluations for women include various blood tests to determine if and when ovulation is occurring.

"Medications can be used to stimulate the production of eggs and facilitate successful ovulation," says Anania. "Clomophine citrate is an oral medication that has been used for about 30 years. There is a small risk—about 6 percent—of multiple births, usually twins. It may cause side effects such as hot flashes, breast tenderness or bloating, but most patients tolerate it well and, in any case, they are not kept on it for more than six months."

A second tier of medication—gonadotropins—are given by injection for the purpose of stimulating ovulation. Approximately 25 percent of women who conceive through the use of gonadotropins have twins or multiple births.

"Besides ovulation problems, female infertility may be related to prior infection, such as pelvic inflammatory disease, congenital abnormalities of the uterus, or endometriosis," says Anania. These conditions may cause an obstruction that either prevents the sperm from traveling up to the ovary or prevents the fertilized egg from traveling down to the uterus. Endometriosis, a condition in which tissue that normally lines the uterus occurs outside the uterus, can often be corrected through surgery.

Abnormalities in the uterine cavity may be corrected by hysteroscopy, a procedure in which a small telescope is inserted through the vagina into the cervix. By direct visualization of the uterus, the surgeon can remove abnormal growths—such as fibroids or polyps—that can interfere with implantation of an egg.

The lining of the uterus and fallopian tubes may be evaluated through the use of ultrasound, biopsies, or hysterosalpingogram—an X-ray that involves the passage of dye through the uterus and fallopian tubes.

Intrauterine insemination

In the case of Jane and Jim, both had medical issues that could have been affecting their ability to conceive. Jim had a varicocele that was contributing to a low sperm count. Jane's evaluation revealed a minor case of endometriosis, which was removed through laparoscopic surgery.

After consulting with Anania and Vereb, the couple were given the option of varicocele surgery or intrauterine insemination (IUI). They elected to try IUI, a process that requires close monitoring of the woman's cycle and, in Jane's case, use of medications to stimulate ovulation.

"It takes a sophisticated combination of drugs to mature an egg, to bring about successful ovulation, and to manage the process day-to-day," says McLellan. The woman must have frequent blood work and ultrasounds so the doctors know when the timing is just right for the insemination. At that point, sperm is deposited directly into the uterus via a catheter, bypassing its usual route through the cervix and increasing the chances of fertilization.

"I didn't want multiples," says Jane. "Dr. Anania watched everything very carefully." On the fifth insemination, Jane became pregnant.

"There is no better feeling than calling a patient and telling her that her pregnancy test is positive."

—Pat Sexton, RN

Tweaking nature

For couples treated at the center, pregnancy rates are between 15 and 25 percent with primary treatments and IUI. When varicocele is the primary problem, surgical correction can yield success rates approaching 60 percent. For the small number of patients who don't achieve a pregnancy with primary efforts and who choose to try IVF, the success rate can approach 45 percent.

"There is no better feeling than calling a patient and telling her that her pregnancy test is positive," says Pat Sexton, RN, one of three nurses at the center. "I previously worked in an intensive care unit," she says. "That was total care, but this is total *couple* care. You need to make him as aware of what she's going through as she is of what he's going through."

"Medical treatment for infertility has come a long way, and our center has a lot to offer," says Vereb. "Often it doesn't take a whole lot to tweak nature to where it is supposed to be."

To make an appointment in the Center for Reproductive Medicine, call 781-744-3250. For more information, visit the center's web site: www.lahey.org/reproductivemed

Solving the Puzzle

Cranial Base Surgery

In the past 15 years, new imaging techniques and the collaboration of specialists have enabled surgeons to successfully treat disorders in the cranial base—the area at the center of the skull, beneath the brain and behind the face.

"Tumors that were previously thought to be inoperable can now be safely removed. An aneurysm of a blood vessel deep within the skull can be repaired and blood vessels themselves can actually be replaced," says Carlos A. David, MD, chief of neurovascular surgery and co-director of Lahey's Cranial Base Surgery Center.

Vital connections from the brain run through a complex of cavities and canals in the cranial base on their way to glands and sensory organs. Here, critical arteries bring oxygenated blood to the brain. Veins carry blood back to the heart. Nerves pass from the undersurface of the brain to control such essential functions as smell, sight, eye and facial movement, hearing, speech and swallowing, and ultimately consciousness, breathing, and heartbeat.

When something goes wrong—if a tumor grows or an aneurysm develops—removing a growth or repairing damage is a delicate process.

Evolution of a center

"In the 80s, the multidisciplinary surgical team concept developed," says Peter J. Catalano, MD, chair of Lahey's Department of Otolaryngology/Head and Neck Surgery and co-director of the center. "Because the cranial base involves an area that bridges several specialties—neurosurgery, ophthalmology and otolaryngology—modern cranial base surgery is almost always done by a surgical

Carlos A. David, MD (second from left), and Peter J. Catalano, MD (second from right), collaborate on a craniotomy to treat a cranial nerve tumor. Assisting them are surgical technician Jennifer Sheehan (left) and resident Ivan El-Sayed, MD.

Tools and Technology

Tools developed for microscopic surgery and technological advances in imaging and neurophysiologic monitoring have made it possible to perform life-saving procedures in the area of the cranial base.

Fiber-optic telescope: A thin rod with a tiny camera and fiber-optic illumination, this telescope can be used to look around structures without moving them. "We use the telescope to evaluate the presence or extent of a tumor without the trauma of additional surgery," explains Peter J. Catalano, MD.

Neuro-navigational guidance system: Also called frameless computerized stereotactic guidance, this computerized system requires several steps. First, small plastic stickers are attached to the patient's scalp and an MRI or CT scan is performed. The stickers show up on the scan along with the tumor and are left in place during the development of the guidance plan. "Before the start of surgery, we register the location of those stickers in relationship to the tumor by touching them with a special probe connected to a computer," says Carlos A. David, MD.

The system allows surgeons to navigate safely around normal tissues that may be distorted by a tumor mass and to determine where a tumor ends, thereby minimizing the risk of injury to healthy bordering or adjacent tissue.

Neurologic monitoring: "With neurophysiologic monitoring," Catalano says, "surgeons can determine how much manipulation of vital blood vessels, nerves and brain tissue can be performed safely."

Catalano explains the process when working near the brain stem: "Electrodes that are placed into the scalp and onto the feet and hands are hooked up to a special computer that monitors the neural impulses from the brain to the spinal cord and the limbs. If those pathways are intact, we know that brain stem function hasn't been compromised. We have second-to-second feedback, and our ability to alter what we're doing is usually immediate."

This process can also help prevent paralysis of the nerves that move the muscles of the face, vocal cords and swallowing mechanism. For example, a tumor of the auditory nerve will frequently put the facial nerve at risk. These nerves leave the brain stem in close proximity to one another and run together along the base of the skull to exit from the same canal. "One is for hearing and balance, and the other controls facial movement," says David. He describes the facial nerve as looking like a wet vermicelli noodle.

"As both nerves are so close to one another, pressure from the growing auditory nerve tumor over time will flatten the facial nerve until it's paper thin. Identification and dissection of it away from the tumor becomes very difficult. Nerve stimulators help us trace out the distorted nerves so we can better preserve them."

team. We have created a Cranial Base Surgery Center that has the diagnostic, surgical and medical expertise to deal with the full spectrum of cranial base disorders."

The center sees adult and pediatric patients and treats benign and malignant tumors, aneurysms, proximal cervical spine disorders and vascular problems resulting from trauma or congenital anomalies.

Like pieces of a puzzle

"Prior to the development of skull base techniques, craniotomies—openings in the head—were made as close to the base of the skull as possible," says David. "Then the brain would be lifted, or retracted, in order to expose a path to the tumor. Often, the results were suboptimal, yielding significant injury to the brain."

"Now," says Catalano, "we know that we can dismantle the craniofacial skeleton and associated soft tissues to reach a problem in the cranial base, then reconstruct our access route with little functional or aesthetic damage."

Plastic and reconstructive surgeons Robert W. Dolan, MD, and Timothy Whitney, MD, are important members of the team. "Frequently, tumors involve the face, eye, ear and nose," says David. "Patients are very concerned about the final functional and cosmetic result. Bone, nerves, and soft tissues such as muscle and skin can be autotransplanted from one part of the body to another to reconstruct the skull base area and restore cosmetics and function."

Another essential component of the center is the Department of Radiology for imaging and neurovascular intervention. "MRI and CT scans not only allow us to understand the relationship of the tumor to the brain and skull base," says David, "but can be used to help guide us to it using powerful computers and neuronavigational systems."

Lahey's interventional neuroradiologist, In Sup Choi, MD, is available to provide detailed information about vascular anatomy and to seal off blood vessels to the tumor to reduce bleeding

Cranial base tumors

According to David, cranial base tumors are frequently silent until they are large enough to begin to distort surrounding structures. "Symptoms are usually caused by compression of the brain stem and the vital nerves that are exiting along the cranial base," he says. "Along with experiencing headaches, patients may have double vision, loss of vision, numbness or paralysis in the face, hearing loss or vertigo and, ultimately, loss of sensation and paralysis, which if left untreated will eventually lead to coma and death."

There may be several ways to treat a tumor, and the team works with the patient to arrive at the best plan.

"The majority of cranial base tumors are benign, or noncancerous," says David. "What makes them a problem is their location. Surgery is normally recommended to remove the tumor or as much as can be taken out safely." For malignant, or cancerous, tumors, surgery followed by conventional or focused radiotherapy is usually recommended.

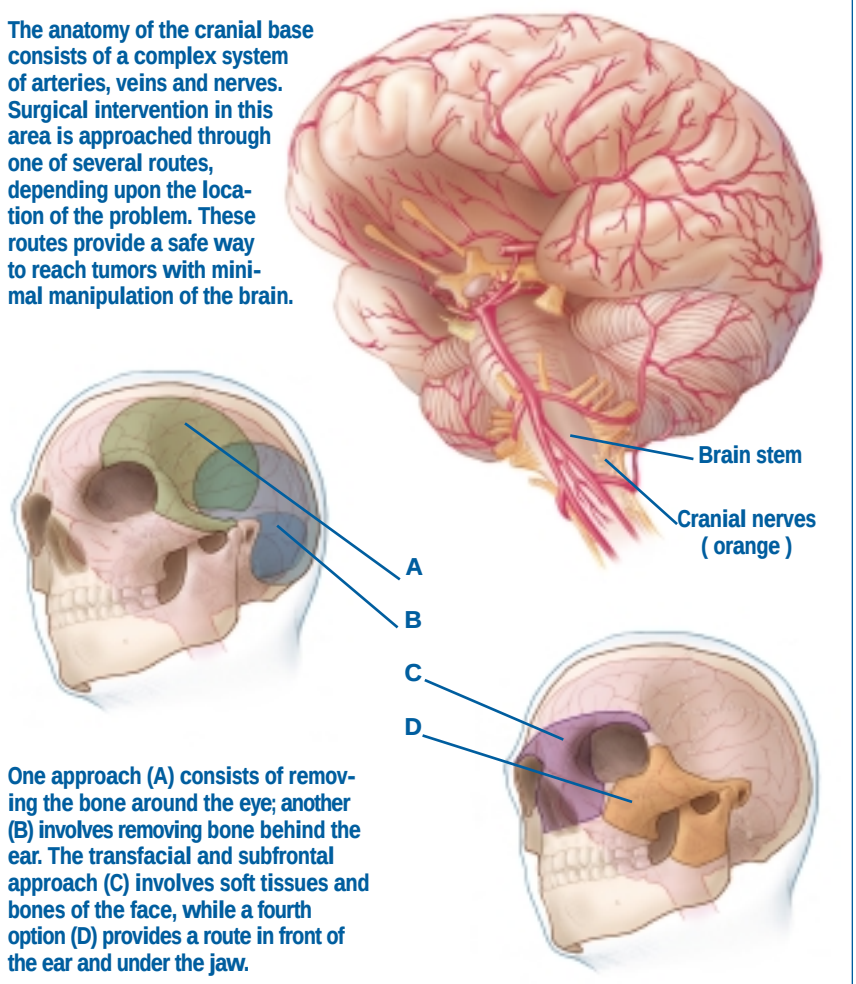
Stereotactic radiosurgery is a method of eliminating residual tumor cells with focused radiation. "This procedure," says neurosurgeon, Peter K. Dempsey, MD, "gives a very high dose of radiation to a very well defined target. It may be used alone or to remove the remnant of a tumor that couldn't be completely taken out by surgery because of its proximity to nerves or blood vessels." In some cases chemotherapy is part of the treatment plan.

A regional center

Lahey's Cranial Base Surgery Center serves patients from throughout New England, the US and abroad. Some come for surgery and then return to their community for further treatment with chemotherapy or radiation.

"We place great importance on our dialogue with the patient's referring physician," says Catalano. "Our goal is to be a rescue or referral center for specific difficult problems that occur in the cranial base."

For further information, call the Cranial Base Surgery Center at 781-744-8982 or 781-744-8450.



The anatomy of the cranial base consists of a complex system of arteries, veins and nerves. Surgical intervention in this area is approached through one of several routes, depending upon the location of the problem. These routes provide a safe way to reach tumors with minimal manipulation of the brain.

One approach (A) consists of removing the bone around the eye; another (B) involves removing bone behind the ear. The transfacial and subfrontal approach (C) involves soft tissues and bones of the face, while a fourth option (D) provides a route in front of the ear and under the jaw.

Branching Out

Advances in Interventional Cardiology

Richard W. Nesto, MD (left), Thomas C. Piemonte, MD, and their colleagues in the Department of Cardiovascular Medicine are gearing up to expand Lahey's cardiovascular research agenda.

While coronary heart disease (CHD) remains the leading cause of death in the US, mortality rates have decreased in the past few decades, thanks in part to advances in interventional cardiology. From balloon angioplasty, which was introduced in 1977, to coronary brachytherapy, which was approved by the Food and Drug Administration earlier this year, interventional techniques have progressed at a rapid pace.

"Technical advances have given us the ability to treat arteries we couldn't easily treat before," says David E. Gossman, MD, director of the Coronary Brachytherapy Program at Lahey. "Today, interventional cardiology goes well beyond simple angioplasty."

"We are branching out from providing standard treatment of coronary heart disease to offer highly specialized procedures," adds Thomas C. Piemonte, MD, director of Lahey's Interventional Cardiac Catheterization Program.

A prevalent problem

CHD occurs when an artery feeding blood to the heart becomes stenotic—narrowed or clogged by a buildup of plaque. While mild stenosis may produce no symptoms, a moderate case may cause chest pain (angina) or pain in the left arm and shoulder. Myocardial infarction—heart attack—can result if the artery is completely blocked or if a blood clot forms as a result of a plaque rupture.

"Coronary heart disease is not a static disease," says Richard W. Nesto, MD, chair of Lahey's Department of Cardiovascular Medicine. "It is a dynamic disease, and it is not the same for every patient."

Treatment is highly individualized according to the patient's degree of disease, overall health and severity of symptoms. For many patients, interventional cardiology offers an alternative to surgery: Using micro-thin catheters threaded through the arteries, cardiologists can often clear blockages, relieve symptoms, and prevent and treat heart attacks.

The definitive diagnostic test for determining the presence and severity of CHD is coronary angiography, a procedure in which a catheter is inserted through an artery in the groin or arm and up into the arteries of the heart. X-ray dye is injected into the arteries so physicians can examine the vasculature while the heart pumps. Lahey's cardiac catheterization laboratory performs more than 3,000 such procedures each year—many of them on an unscheduled basis to quickly assess and treat patients who are having heart attacks.

"For stable, ambulatory patients, diagnostic angiography is appropriate when symptoms combined with a positive exercise test suggest coronary heart disease," explains cardiologist Christopher Pyne, MD.

Options for intervention

When stenosis is detected during angiography, physicians often decide on the spot whether to perform an intervention to clear the artery. At Lahey, roughly 1,800 interventions are performed each year. "Today, patients are prepared for the possibility of having angioplasty immediately based on the results of angiography," says Pyne.

Balloon angioplasty is a relatively common procedure in which a balloon-tipped catheter is threaded through the artery to the site of the blockage. The balloon is inflated to dilate the vessel, then deflated and removed.

Recently, angioplasty has achieved broader use as an emergency treatment. "There has been a change in the culture of treatment for heart attack," says Nesto. "In the past, thrombolytic medications might have been the first course of action. Today, in a cardiac emergency, the best treatment is angioplasty. If the patient is within an hour of a cardiac catheterization lab, it is best to clear the artery and get blood flowing."

But angioplasty continues to be a useful treatment for patients with more mild forms of CHD. At Lahey, 98 percent of patients who undergo angioplasty also receive

Clinical Trial: Diabetes and Heart Disease

"Despite recent advances, there is still a need for better treatments for coronary heart disease," says Richard W. Nesto, MD, chair of the Department of Cardiovascular Medicine. "For example, the prevalence of diabetes is expected to double in the next 20 years. If that happens, it could offset some of the successes we've had in treating coronary heart disease."

That's because two-thirds of diabetes patients ultimately die from some form of heart disease. "This disease is different in patients with diabetes, but 90 percent of our knowledge about it comes from patients who don't have diabetes," says Nesto.

Nesto is a principal investigator of a clinical trial sponsored by the National Institutes of Health called Bypass Angioplasty Revascularization Investigation 2 Diabetes (BARI 2D). The study is comparing whether initial treatment of coronary heart disease with angioplasty or bypass surgery is preferable to starting with a program of standard medications. It is also assessing whether diabetes itself is better controlled by insulin or by insulin-sensitizing medications.

"This study is testing our approach: Is it better to be invasive or noninvasive, or is it a matter of staging? We hope to establish outcomes using various existing treatment patterns," says Nesto.

Overall, 40 sites nationwide are participating in the research, and Lahey is one of the first seven sites to initiate this study. Patients may be eligible to enroll if they have type 2 diabetes, coronary heart disease with mild or no symptoms, are otherwise in good health, and are willing to follow up for five years to insure control of their diabetes. For more information, call 781-744-2734.

a stent—a wire mesh device that is left in place as a "scaffold" to hold the artery open after it is cleared. When patients experience a recurrence of the blockage, it is often due to scar tissue forming around the stent, a condition known as "in-stent restenosis."

"The benefit of angioplasty is that it allows many patients to avoid heart bypass surgery," says Gossman. "The weakness had been that prior to stenting there was a recurrence rate of 35 to 40 percent within six months, and even with stents, about one-quarter of the patients come back with restenosis."

"There is less likelihood for them to come back if they have bypass surgery," says Piemonte, "but it depends on a lot of factors, and many people don't want open heart surgery."

Coronary brachytherapy

In February of this year, the FDA approved the use of coronary brachytherapy for the treatment of symptomatic in-stent restenosis, and by March, Lahey cardiologists and radiation oncologists were using the technique to treat patients with this condition.

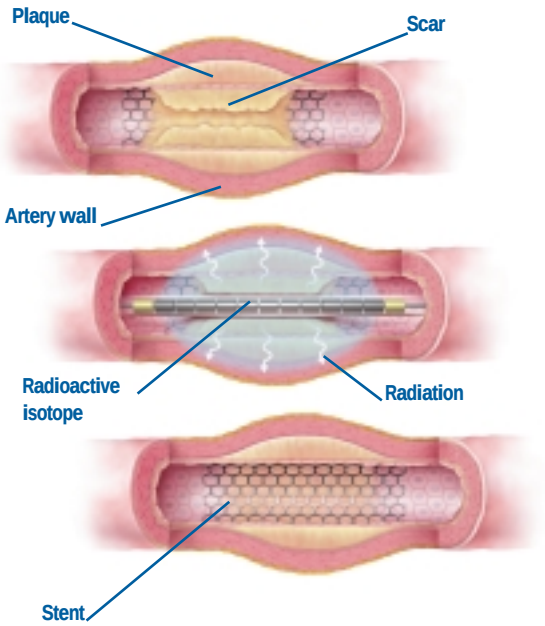
In this procedure, angioplasty is performed to clear the stented artery, then a train of low-dose beta radiation is placed at the site of restenosis. After a few minutes, the radiation is removed. This brief dose of radiation inhibits the growth of scar tissue that builds up around the stent and contributes to blockage.

"Low-dose radiation inhibits fibroblasts from forming scar tissue," says radiation oncologist Sidney Kadish, MD. "During angioplasty, the balloon pushing back the area of narrowing represents a trauma for the vessel. By treating with radiation after the trauma, we can reduce the proliferation of scar tissue.

"Brachytherapy puts the source of radiation right where you want it to be," he adds. "We have used brachytherapy to treat cancers of the lung, bronchus, prostate and other organs. What's new and exciting is that this concept is now being applied to a vessel that feeds the heart."

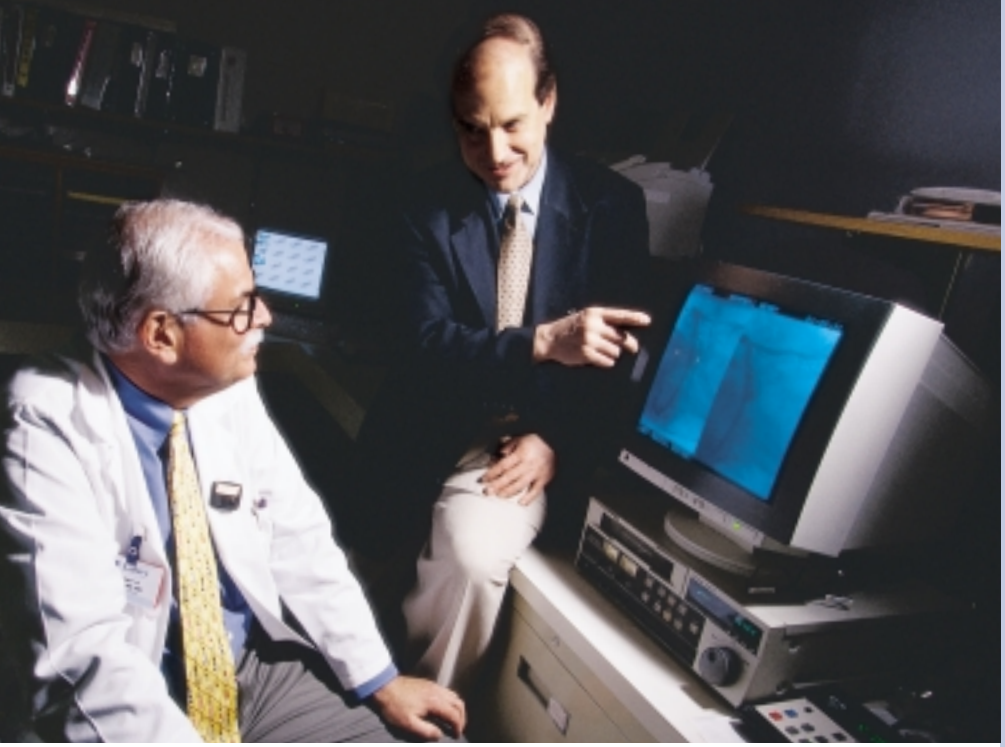
While brachytherapy is not approved as a primary therapy for stenosis, it has proven effective in treating in-stent restenosis. "Studies of the effectiveness of coronary brachytherapy consistently show that it reduces the rate of restenosis by about one-half," notes Gossman.

"There are different degrees of restenosis, and patients can tolerate a fair amount," he adds. "But, in general, any patient with symptomatic restenosis is



Coronary brachytherapy is used to treat in-stent restenosis, a common complication in patients with intracoronary stents.

Top: Scar tissue may form in and around the stent within the artery, causing blockage and a recurrence of symptoms.
Middle: Low-dose radiation is inserted via a catheter to the site of restenosis, then removed after a few minutes. The radiation reduces the growth of scar tissue.
Bottom: Post-treatment shows the stent clear of blockage.



Cardiologist David E. Gossman, MD (right), and radiation oncologist Sidney Kadish, MD, review pretreatment and post-treatment angiography of a patient who has had coronary brachytherapy.

a candidate for brachytherapy. The risks are remote, because the dose is extraordinarily small and very targeted."

Extending treatment and research

Even as they integrate brachytherapy into their clinical practice, Lahey's cardiologists are working to develop techniques and devices that may one day make the procedure obsolete.

"Interventional cardiology is a rapidly changing field," says Manish Chauhan, MD, director of interventional research. "We want to bring new therapies and technology to patients to overcome the limitations of current treatments."

For example, Chauhan says, research is being conducted into the use of intracoronary stents coated with medications that inhibit the growth of scar tissue. The theory is that this technique may completely eliminate restenosis and the need for repeat procedures.

Infrared spectroscopy involves a special catheter that enables physicians to determine whether the plaque in an artery is primarily made up of fatty material or fibrous tissue. "Different plaques cause different risks," says Nesto. "Heart attacks occur largely as a result of ruptures of fatty plaques." Medications such as statins are beneficial in treating fatty plaques, so identifying them early means they can be targeted for treatment. This fall, Lahey will be one of only a few sites in New England to test the ability of this device to determine the makeup of plaque.

Distal protection devices are under development for use in patients who have had heart bypass surgery and developed blockages in the bypass graft. "The blockage may be crumbly, like the consistency of feta cheese," says Piemonte. "If this material goes 'downstream' it can block small arteries." Piemonte is helping to develop a device that works as a "catch" to collect such debris during angioplasty. When the procedure is completed, the catch—and the debris—are pulled out through the catheter.

Chauhan points out that some new treatments, such as brachytherapy, may soon be used to treat peripheral vascular disease—blockages in arteries other than those of the heart and brain. "Lahey is one of the largest centers in Boston treating peripheral vascular disease," he says. "We are expanding our research capacity to provide our patients access to clinical trials and new therapies."

To make an appointment in the Department of Cardiovascular Medicine, call 781-744-3250. For additional information, visit the department's web site: www.lahey.org/cardio

Fixing a Hole in the Heart

New technology and devices are offering less invasive treatments for heart conditions and extending the function of the interventional cardiologist.

Patent Foramen Ovale (PFO) is a condition characterized by a hole in the heart between the left and right atria. In rare cases, small emboli travel from the right atrium through the hole into the left atrium. From there, the embolus may travel to the brain, causing stroke.

"Most patients with PFO do not have strokes," says cardiologist Thomas C. Piemonte, MD. "But if the patient has had a stroke, and the neurologist determines that PFO is a factor, we now have a way of repairing the hole without doing open-heart surgery."

Transcatheter hole closure is a minimally invasive procedure involving placement of a collapsible implant over the hole that seals it closed. The collapsed implant is placed into position via a catheter threaded through a vein in the neck or groin. Once in place, the device expands to close the hole.

In New England, the device is being used and evaluated at Lahey and at Children's Hospital in Boston. It is approved for safety by the Food and Drug Administration under the Humanitarian Use Devices Act, pending additional study.

Spine Center

Chasing Back Pain

Here's the most important thing to know about back pain: Eight out of 10 people have it at least once, and most recover without doing anything beyond resting for a few days or weeks, taking aspirin or ibuprofen, and using common sense.

Here's another important fact: Lahey Clinic's new Spine Center is set up to consult with, evaluate, review treatment possibilities and recommend therapy—whether surgery, rehabilitation programs, pain management or some combination— for the 20 percent of back sufferers whose problems have proved reluctant to go away.

"The fact is, the great majority of back problems can be treated best at the primary care level," says orthopaedic surgeon Bernard A. Pfeifer, MD, the Spine Center's director, "and most back pain sufferers will get better in four to six weeks.

"It's the patients with problems that haven't responded to routine care over a period of months that we're set up to serve," he says.

A multispecialty approach

Bringing together specialists in neurosurgery, orthopaedic surgery, pain management and rehabilitation, the Spine Center draws on experts with diverse perspectives to offer patients treatment that's most appropriate for them.

Meeting at Lahey Lexington each Monday, Spine Center staff members—Pfeifer, neurosurgeon Subu N. Magge, MD, pain management specialist Cynthia H. Kahn, MD, physiatrist James Sarni, MD, and several others—consult with and evaluate patients referred by physicians both within and outside the Lahey network.

"The pathology of back pain is not as clear as with knee or shoulder pain," says Sarni, the physiatrist—a specialty that focuses on physical medicine and rehabilitation. "One of the most important things to do when someone comes in is to get a sense of what's going on and develop a treatment plan.

"Surgery is basically your last resort," he says. "Before you reach the point of referring a patient for surgery, you want to take him or her as far as possible with rehabilitation and pain control.

"And you need to know when surgery is the appropriate recourse."

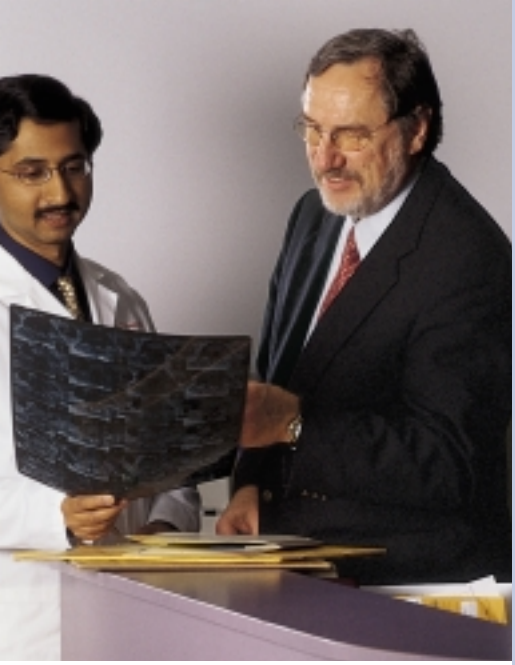
A complex system

Visualize the spine and you most likely see the system of vertebral bones, discs and cartilage that form your backbone. In fact, the back is a complex system of muscles, ligaments and nerves as well as vertebrae and discs that all have to work together to support the weight and stress of your body.

Possible causes of back pain are myriad—strained muscles and ligaments, osteoarthritis that wears on vertebrae, degenerative disc disease that erodes the fibrous discs that separate vertebrae, compressed or inflamed nerves within the spinal column, osteoporosis that leads to compression fractures, disc herniation that causes the disc to bulge or rupture and press against nerves.

And a major factor is the way you treat your back. Excess weight, poor muscle tone caused by lack of exercise, poor posture, heavy lifting—all can contribute insult to your back.

Range of motion, flexibility and muscle tone are among the factors physiatrist James L. Sarni, MD, checks out during a patient evaluation in the Spine Center.



Neurosurgeon Subu N. Magge, MD (left), and orthopaedic surgeon Bernard A. Pfeifer, MD, are two members of the multispecialty Spine Center.

A Glossary of Back Pain

• **Muscle and ligament strains:** These are the most common back problems, and the ones that can usually be dealt with over a matter of days or weeks through rest and simple pain medications. Common causes are excessive stress on the back, such as heavy lifting, "out of condition" muscles, and twisting your back into positions it's not built for.

• **Degenerative disc disease:** Discs are flexible pads of fibrous material called the annulus fibrosis that enclose a jelly-like substance called nucleus pulposus and serve as shock absorbers. Aging and wear lead to a period of instability and inflammation of the disc. Effects can vary, but they can include narrowing of the discs or development on the vertebra of bone ridges or protrusions that can cause pain. While there are back problems that can relate to a vertebra itself, a disc is far more likely to be the source of trouble.

• **Herniated disc:** When placed under undue stress, an intervertebral disc can rupture so that the nucleus pulposus material inside extrudes and, very likely, presses against a nerve to cause pain. Even a bulging disc that has not ruptured may press against a nerve to cause pain. In most cases the extrusion or bulging will diminish over a period of about six weeks, relieving the pain spontaneously.

• **Discectomy:** If the extruded disc material has become trapped outside the disc, the pressure against a nerve that it causes will not be able to resolve spontaneously. It is estimated that 70 percent of disc herniations will resolve by themselves, but discectomy—the procedure to remove the offending disc material—may be necessary.

• **Laminectomy:** The removal of a vertebra's bony lamina, often but not always to access the disc to perform a discectomy.

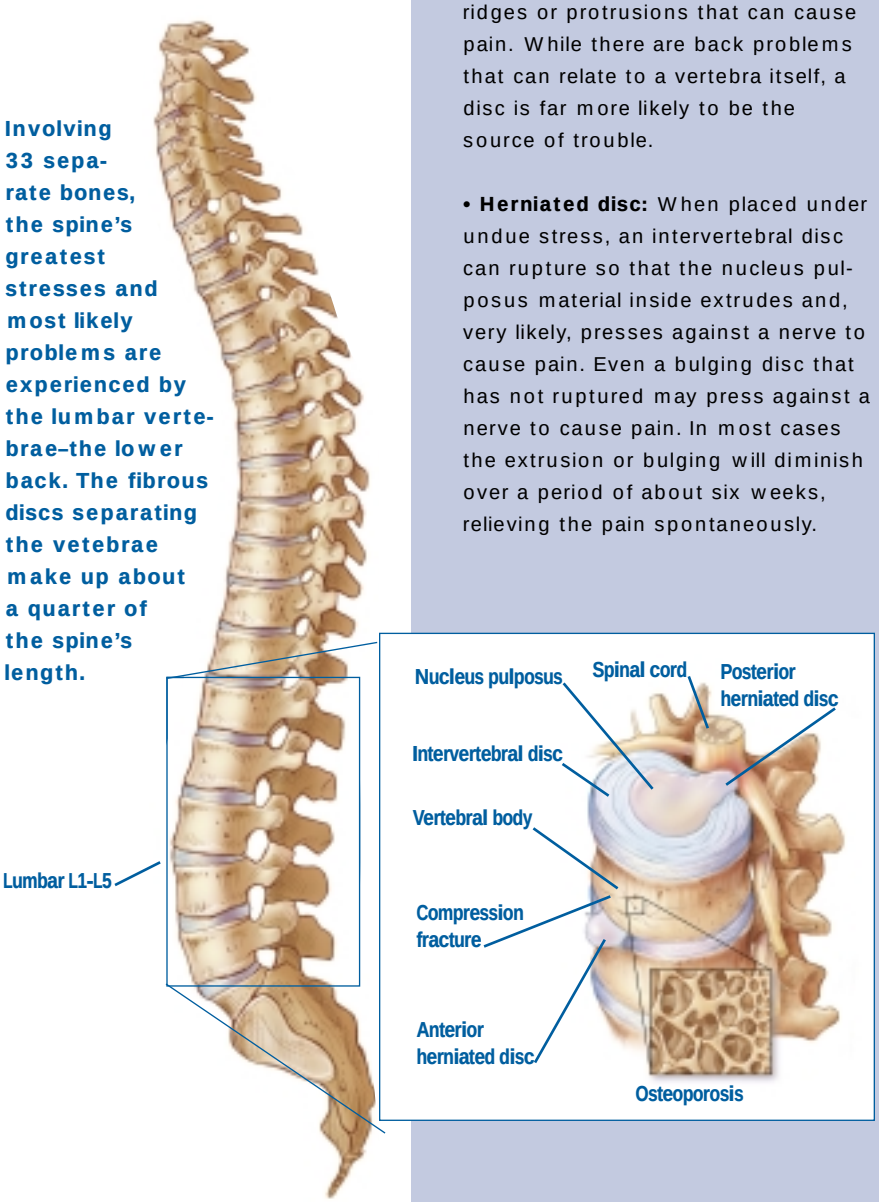
• **Sciatica:** When a nerve is pinched or compressed by a bulging or herniated disc or other problem, shooting pain can be experienced down one or both legs. Sciatic pain by itself is not usually a criteria for surgery, as it will diminish when a disc problem spontaneously resolves. Often, spine specialists also look for weakness in leg muscles as a sign of a serious problem.

• **Spinal Fusion:** When two vertebrae meet together abnormally, the resulting instability can cause pain. Spinal fusion is a process of joining the unstable bones together to eliminate the abnormal movement. This is often performed with special screws and rods to pin bones together as they heal.

• **Osteoporosis:** As people age, they stop building bone and start losing calcium, resulting in thinning or reduction in the density of bone material. Osteoporosis is most common in—but not limited to—women who have passed menopause, and it can affect bones throughout the body.

• **Compression fracture:** When a vertebral bone loses enough density—and strength—it can collapse. The problem often can be repaired surgically, or with the interventional neuroradiology technique of vertebroplasty, in which "cement" is injected into the bone to reinforce it. Lahey is one of only a few institutions in New England offering vertebroplasty services.

Involving 33 separate bones, the spine's greatest stresses and most likely problems are experienced by the lumbar vertebrae–the lower back. The fibrous discs separating the vetebrae make up about a quarter of the spine's length.



Pain management specialist Cynthia H. Kahn, MD.

"In fact," says Sarni, "an absolute diagnosis is generally made in only about 15 percent of back pain patients."

A streamlined process

The enormous advantage of the multi-specialty Spine Center approach, says Kahn, the pain management specialist, is that it eliminates the potentially long process of finding the right doctor for patients with complex, multifactorial problems.

"With an efficient screening process and all of this expertise represented in the center at the same time, we can refer to the right colleague very quickly," she says.

Notes neurosurgeon Subu Magge, MD, "Lahey has long had a strong spine surgery service, based in the Departments of Neurosurgery and Orthopaedic Surgery, with very good outcome rates. In fact, laminectomy is one of the most frequently performed surgical procedures at Lahey.

"Our program includes six back surgeons and two nonoperative physicians, as well as extensive Physical Therapy Departments at Burlington, Peabody and Lexington. So it's not so much that all of these capabilities are new, but that we're improving access to them," he says. Surgery is performed at Lahey Clinic Medical Center in Burlington, and pain management interventions are provided at Lahey Arlington.

Quality of life a goal

The Pain Management Center, based at Lahey Arlington, represents strong capabilities for dealing with chronic pain—an array of treatment options ranging from implants, nerve blocks and epidural steroid injections to radiofrequency lesioning.

"Our role," Kahn says, "may be to help the patient prevent or delay surgery, or in some cases if pain remains after surgery, to help them manage that pain. We also treat patients who are not surgical candidates and need some type of pain control to improve their function and quality of life.

"We have options we can provide to the patient, such as IDET (intradiscal electrothermocoagulation) and pain control through medications, exercise and rehabilitation, and injections, if needed. Our goal is to keep them working and help them maintain their quality of life."

Surgery can have the benefit of a decisive fix for appropriate cases, but in fact most back problems are more suitable for a rehabilitation program, with or without pain management intervention.

"The basic goal of a rehabilitation program," says Sarni, "is to strengthen the injured segment in order to protect it from future overwhelming stresses. You strengthen a muscle system by placing a load on it—always enough to strengthen it, not to make it worse."

Sarni's role is to diagnose and prescribe a program that can be fulfilled by the patient and physical therapists, using an assortment of hand and knee exercises, weight strengthening machines, even the large red exercise ball found in most physical therapy departments and health clubs.

"The most important thing," Sarni says, "is to maximize patients' range of motion and activity. If they don't have motion, they develop weakness and stiffness, and then there's more pressure on the painful segment.

"The vital concept is to strengthen safely," he says. "That's why I'm a big believer in supervised therapy."

Patients are seen in the Spine Center upon referral by a physician. If you would like to be evaluated in the Spine Center, your physician can make a referral by calling 781-744-8899. See the Spine Center web page at www.lahey.org/spine/ for more information about staff and services, including pelvic tilt exercises and body mechanics. See our web page at www.lahey.org/vertebroplasty/ for more information about Lahey's vertebroplasty service.

Protecting Your Spine

The good news is that there are a number of things you can do to minimize the chances of back problems altogether. The bad news is that you actually have to do something to achieve and maintain a healthy spine.

- **Exercise:** There are specific pelvic tilt exercises you can do to strengthen the back and abdominal muscles that protect the spine. In addition, some forms of regular low-impact exercise can help in strengthening the muscles that protect the spine, but Sarni notes that low-impact aerobic activity does not take the place of low back-strengthening exercises. "A physical load must be placed across the spine to improve muscle strength," he says, "but this should be done in a very gradual manner and starting at a load the patient knows is safe."

Also, weight-bearing exercises like walking and biking are important to prevent osteoporosis, and a good program should include both, Pfeifer adds.

- **Lose weight:** Excess weight, especially a "pot belly," places an enormous strain on the lower back and is a major contributor to back problems.
- **Practice good posture:** Watch body mechanics and posture in all activities, including sleep. Bend your knees rather than your lower back when bending over. Use your legs in lifting heavy objects.

How to Keep Your Back Healthy
Tuesday, December 18, 4:30 pm

For details about this and other health and wellness events, turn to the Healthcare Calendar inside the back cover.

Lahey CLINIC News

Lahey Physicians Honored

Alan H. Nauss, MD

Lahey pediatrician Alan H. Nauss, MD, was recently honored with an award from Boston's Children's Hospital for service to pediatrics and the community. Nauss was one of a handful of pediatricians from eastern Massachusetts selected for this honor. Nauss, an assistant clinical professor at Harvard Medical School, is the former chair of Lahey's Department of Pediatric and Adolescent Medicine and in the past has been included in *Boston Magazine*'s top doctors rankings. He has been a member of the Lahey staff since 1983.

Joseph K. Hurd, Jr., MD, a member of Lahey's Department of Gynecology, was cited in August as one of "America's 101 Leading Black Physicians" by *Black Enterprise* magazine. Hurd, a member of the Lahey staff since 1972, is a former chair of the Department of Gynecology and a clinical instructor of surgery at Harvard Medical School.

Joseph K. Hurd, Jr., MD

Lahey's Fourth Annual Quality Day

Lahey Clinic will hold its fourth annual Quality Day, a day-long forum for recognition of clinical and administrative performance improvement projects, on Tuesday, October 30.

More than a dozen speaker and poster presentations will be represented describing quality improvement commitments at the Clinic on topics as varied as preventing medication errors, improving management of heart attacks and streamlining the patient appointment system.

"Our annual Quality Day program is the tip of the iceberg in terms of the continuous effort of Lahey staff to improve our systems of caring for patients," says Sanford R. Kurtz, MD, Lahey's chief operating officer. "Both in terms of the medical services we provide and the quality of our patients' visits to our medical center, we are constantly assessing and working to improve our standards."

This year's Quality Day program will run from 8:30 am to 4 pm in the Medical Center's Alumni Auditorium, and will feature a keynote address by Kenneth LaBresh, MD, associate clinical coordinator of the Massachusetts Peer Review Organization (MassPRO) and president of the American Heart Association, New England affiliate. All interested persons are welcome to attend. Go to our web page at www.lahey.org to see a schedule of the day's presentations.

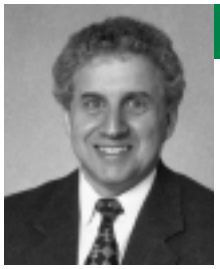
Patient Care Awards

Urologist John J. Smith III, MD, and radiation oncology nurse Donna L. Smith, RN, OCN, were named this year to receive Lahey Clinic's annual Patient Care Awards, recognizing Lahey caregivers with outstanding clinical and human caring skills.

The awards are presented annually to one physician and one nonphysician caregiver. The physician award is aimed at medical staff members who best exemplify "the ideals of their profession by combining a mastery of the art and science of medicine with the human values of caring, empathy and effective communication." The nonphysician award is presented to employees who have "directly or indirectly contributed to the culture of empathetic, high-quality patient care at Lahey Clinic."

The recipients are selected by members of Lahey's Medical Ethics program from Clinic-wide nominations, and awards are presented each June during the monthly Medical Ethics Lecture program.

Erdos Named Massachusetts EMS Director



Michael S. Erdos, MD

Michael S. Erdos, MD, an emergency physician at Lahey Clinic Medical Center, has been appointed Emergency Medical Services (EMS) Medical Director for the Commonwealth of Massachusetts.

In this position, Erdos, who will continue to serve on the Lahey Clinic medical staff, will oversee clinical aspects of emergency services in Massachusetts as the new "EMS 2000" legislation is implemented. His duties will include a wide range of responsibilities, including oversight for the development of a statewide trauma system, new guidelines for critical care transport services and mass casualty and antiterrorism planning.

A member of the Lahey Clinic staff since 1988, Erdos established and continues to direct the North Suburban EMS Consortium, which provides Advanced Life Support (ALS) services to nine cities and towns in Boston's northwestern suburbs. He has also been medical director for Northeastern University's Paramedic Training Program and the Region IV (Metro-Boston) EMS Council. He received the Massachusetts EMS Physician of the Year Award in 1993.

What's *Inside*

Overcoming Infertility

Treating infertility requires close collaboration between specialists as well as sophisticated evaluation and options. *Page 6.*

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Cranial Base Surgery: Hidden Territory

Lahey's team approach provides state-of-the-art care for patients with disorders deep inside the center of the skull. *Page 9.*

Coronary Heart Disease: New Treatment and Research

Technical advances are improving treatment options for patients with coronary heart disease. *Page 11.*

Treating Back Pain

When back pain doesn't respond to routine care, this multidisciplinary team offers evaluation and treatment options. *Page 14.*

Peripheral Neuropathy

Neurologists use multiple tools to diagnose weakness and pain associated with peripheral nerve damage. *Page 4.*