Happy outcomes from high-risk pregnancies
Making informed decisions

A Message from the President

When it comes to your health, you want to make the best choices and decisions possible. But the choices can be confusing. Different physicians might make conflicting recommendations. Different hospitals offer various options. Your family and friends might disagree. How do you know what is the best decision for you?

Today there are many resources available to assist healthcare consumers in making an informed decision about where to receive their care. There are certain indicators of quality healthcare — reports on the best clinicians in their fields, a hospital’s reported commitment to the latest technology, a reputation for a caring and compassionate approach to patients and families. Online, many organizations — both government and non-profit — provide objective and comprehensive guides that measure and report the quality benchmarks of hospitals. In fact, Yale-New Haven Hospital offers patients and families by its reported commitment to the latest technology, a reputation for a caring and compassionate approach to patients and families. On the Internet, many organizations — both government and non-profit — provide objective and comprehensive guides that measure and report the quality benchmarks of hospitals. In fact, Yale-New Haven Hospital assists patients by reporting on its key quality measures each month via the hospital’s Web site (www.ynhh.org).

When you are faced with a health crisis or a serious illness, it is not the ideal time to research hospital performance and quality. An illness or injury is an emotionally stressful time when you often need to make an informed decision quickly. Therefore, it might be reassuring for you to know that there are only a few places in the country that have the depth and specialization that Yale-New Haven Hospital offers. As you read the stories in this issue of Yale-New Haven, you will see the value of having such specialized resources right here in New Haven.

For example, Yale-New Haven’s wonderful high-risk maternity services are featured in the story written by a YNHH employee who spent a month in our maternal special care unit. Her daughter was born at 25 weeks’ gestation, weighing just one pound, yet today little Lauryn is a happy, normal 3-year-old.

Sleep disorders among children are on the rise — affecting an estimated 25 percent of children and teenagers, and putting them at risk for more serious problems when they grow up. In response, the pediatric sleep center at the Yale-New Haven Children’s Hospital has expanded its sleep laboratory and has invested in the latest polysomnographic equipment. If you or a loved one suffers a stroke, it is reassuring to know that Yale-New Haven Hospital’s stroke center was the first in southern Connecticut to become nationally certified as a Primary Stroke Center by the Joint Commission. This designation recognizes our commitment to providing the highest standard of stroke care, including rapid assessment by a multidisciplinary stroke team and the most advanced treatment with clot-busting medications.

If the emergency is a heart attack, you might want to know that only one-third of U.S. hospitals are able to open a heart attack patient’s blocked arteries within 90 minutes of arriving at the hospital — the American Heart Association’s recommendation — and Yale-New Haven is one of them. If a patient’s arteries are unblocked within less than 90 minutes, the risk of death is cut 40 percent.

Before you need to make a choice, we invite you to find out more about Yale-New Haven Hospital. We are confident that you will like what you see.

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President and CEO

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I'll begin with my own story... It was early May 2003. My husband and I, already the parents of a 2-year-old son, learned we were expecting another child—she was due on January 6. We were thrilled, yet scared, because we had lost a previous child—she was in utero during my sixth month of pregnancy.

Yale-New Haven Hospital's high-risk maternity care

Three families, three stories—one thing in common

Yale-New Haven Hospital's high-risk maternity care

by Myra Stanley

I was admitted to Yale-New Haven's maternal special care unit (MSCU), which opened in 1982 as the first of its kind in New England. This 18-bed inpatient unit was designed for the care of mothers undergoing high-risk pregnancies and was equipped with sophisticated fetal and maternal cardiac monitoring. The unit has specially trained nursing staff and private rooms with a sleeping area for overnight visits from family members.

"Yale-New Haven's maternal special care unit is a unique entity," explained Ellen A. Arends, R.N., patient service manager for the maternal special care unit. "Unlike many hospitals, where patients with high-risk pregnancies are admitted into a regular labor and delivery department, expectant mothers undergoing sensitive pregnancies at YNHH are admitted to this special unit where their additional clinical and emotional needs can be addressed."

Early one Sunday morning, after three weeks of bed rest, 24-hour fetal monitoring and nervously willing our unborn daughter to grow, a test indicated that the baby's heart rate was dropping. It was time for her to enter the world even though she was only at 25 weeks' gestation. Less than 30 minutes later, I was in the operating room, prepped for a cesarean delivery. Lauryn was born weighing one pound. Neonatal nurses whisked her off to the hospital's newborn special care unit, where specialists could conduct constant fetal monitoring and nervously willing our unborn daughter to grow, a test indicated that the baby's heart rate was dropping. It was time for her to enter the world even though she was only at 25 weeks' gestation. Less than 30 minutes later, I was in the operating room, prepped for a cesarean delivery. Lauryn was born weighing one pound. Neonatal nurses whisked her off to the hospital's newborn special care unit, where specialists could conduct constant fetal monitoring and nervously willing our unborn daughter to grow, a test indicated that the baby's heart rate was dropping. It was time for her to enter the world even though she was only at 25 weeks' gestation. Less than 30 minutes later, I was in the operating room, prepped for a cesarean delivery. Lauryn was born weighing one pound. Neonatal nurses whisked her off to the hospital's newborn special care unit, where specialists could conduct constant fetal monitoring and nervously willing our unborn daughter to grow, a test indicated that the baby's heart rate was dropping. It was time for her to enter the world even though she was only at 25 weeks' gestation. Less than 30 minutes later, I was in the operating room, prepped for a cesarean delivery. Lauryn was born weighing one pound. Neonatal nurses whisked her off to the hospital's newborn special care unit, where she would spend the first year of her life.

Because of our loss a year earlier, my obstetrician recommended that high-risk maternity experts at Yale-New Haven Hospital's (YNHH) department of maternal-fetal medicine, or high-risk pregnancy team, closely monitor this pregnancy. What I would soon come to learn was that this high-risk pregnancy program at the hospital provides ongoing care and management to women with a history of pregnancy risks or current medical complications. It offers an expert team of perinatologists, nurses, sonographers and genetic counselors, coupled with the newest technology and skilled knowledge of the latest clinical techniques. The Yale obstetrical specialists and subspecialists kept in contact with our baby was healthy and developing on track. Then, about midway through the pregnancy, came the dreaded news that was all too familiar. Just as had occurred during my previous unsuccessful pregnancy, it seemed that our baby was not growing at the appropriate pace. Targeted ultrasound monitoring (more detailed than most routine ultrasound) at the Long Wharf high-risk pregnancy facility indicated that our baby was smaller than the average 22-week-old fetus. The condition was called IUGR—intrauterine growth restriction. The loss of our daughter a year earlier had been attributed to those four alarming letters.

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That same year, another mother with a 3-year-old son was also lucky to live near Yale-New Haven Hospital. Toccarra Thomas, of New Haven, had selected Yale-New Haven for her obstetrical care, and when she discovered that she was expecting triplets, she was referred to the hospital's high-risk pregnancy unit for examination. The three fetuses, two girls and a boy, were developing well. About halfway through the pregnancy, though, fetal monitoring and a sonogram detected that Toccarra had developed placenta previa, the implantation of the placenta at least partially covering the cervix. This condition occurs in about one in 200 pregnancies, but is far more common with triplets.

Yale-New Haven perinatologists gave Toccarra two choices: bed rest at home or in the maternal special care unit. She opted for home rest so that she could be with her son as much as possible before his three siblings were born. Toccarra continued to be monitored as an outpatient by the maternal-fetal medicine specialists.

At a check-up during her twenty-sixth week of pregnancy, doctors realized Toccarra was having contractions during fetal monitoring, a process where a "belt" is tied around the abdomen to monitor the movements and vital signs of the fetus. She was admitted to the maternal special care unit, where doctors attempted to halt the early labor and administered steroids to help the babies' lungs mature. The next day, Duaytin Jr., Aaliyah and Arianna were born at twenty-six weeks' gestation, weighing 2 pounds; 1 pound, 10 ounces; and 1 pound, 4 ounces, respectively. They each spent between two and six months in the NBSCU before going home with their parents.

The triplets, now 3-and-a-half years old, are healthy and strong. Their parents attribute the babies' success in great part to the early intervention and close monitoring they received at Yale-New Haven's high-risk pregnancy unit, and their specialized, intensive care in the NBSCU. "The doctors and nurses at the hospital were great," said Toccarra. "Being pregnant with triplets was pretty scary. They encouraged us, supported us and gave us advice," she continued. "The staff at the NBSCU unit even gave us a specially ordered triplet stroller to help get us off to a good start. I am really grateful to the hospital and staff for helping me have healthy babies."

(Left) Edmund F. Fasoli, MD, co-chief of maternal-fetal medicine, examines a patient's ultrasound scan. A fetal ultrasound is a diagnostic technique that uses high-frequency sound waves to create an image of the uterus and fetus.
In March of 1998, Claudia Esposito and her husband Andrew, of Madison, got the news that they were expecting twins. After conception issues and a heart-wrenching miscarriage, this exciting news was both welcome and terrifying. At the referral of her private obstetrician, Claudia began regular monitoring and testing by YNHH's high-risk pregnancy service.

YNHH specialists confirmed that there was an abnormality with the placenta called Twin-to-Twin Transfusion Syndrome, a condition which can affect identical twins who share a common placenta. Claudia's greatest fear was realized about four weeks later when she lost the twins in utero. Although this experience was one of the most difficult imaginable for Claudia and her husband, she expressed her gratitude and admiration for the staff members that helped her during the very troubling experience.

"I can't say enough about the care I received at Yale-New Haven. The nurses were stellar and they helped us make the best out of the worst possible situation," said Claudia. She believes that the comfort and care she and her husband received from the staff helped her through the grieving and bereavement process.

After the loss of her twins, Claudia, along with her obstetrician, continued to seek care, monitoring and counseling at YNHH with subsequent pregnancies, one of which also ended in miscarriage.

Then, in March 2000, Claudia's obstetrician confirmed that she was expecting a baby. Once again, Claudia and Andrew were flooded with mixed emotions that included excitement and anxiety. Throughout her pregnancy, Claudia was closely monitored by specialists in Yale-New Haven's high-risk pregnancy group along with her private obstetrician. She noted that throughout the pregnancy, nurses and specialists in the high-risk unit, aware of her history of disappointments, were supportive and encouraging.

In November, their son Andrew entered the world. His younger brother, Matthew, came along 19 months later. Today, Claudia's sons, ages 6 and 5, are healthy and happy and keeping her household quite lively.

"I can't say enough about the care I received at Yale-New Haven. The nurses were stellar and they helped us make the best out of the worst possible situation."

"Yale-New Haven Hospital's high-risk pregnancy group is unique in that it can provide the entire spectrum of care, from pre-conception counseling — particularly if a couple has reason to believe there may be risks involved in conceiving — to fetal monitor screening and monitoring right through birth," said Edmund F. Funai, M.D., co-chief of the section of maternal-fetal medicine.

YNHH is the largest maternal-fetal medicine department in the state with 14 attending physicians, seven fellows and 45 staff members including nurses, residents and perinatal sonographers. Yale's high-risk pregnancy care spans Connecticut, Rhode Island, New York and New Jersey for clinical management, genetic counseling, high-risk consultations and high-end obstetric ultrasound, with about 28,000 ultrasound scans annually by specially trained perinatal sonographers. In addition, they have the most active Chronic Villus Sampling (CVS) program in southern New England. CVS is a prenatal test that detects fetal chromosomal abnormalities such as Down syndrome, as well as a host of other genetic disorders.

Another thing that makes Yale's program distinctive is that there is always a perinatologist on site around the clock. In the event of an emergency procedure or evaluation, we don't have to page someone or call them in from home or another facility," Dr. Funai explained.

YNHH's high-risk maternal-fetal medicine program delivers approximately 500 babies of high-risk mothers. In addition, 150 mothers are transferred from throughout the region annually. Along with the services provided at YNHH and the Long Wharf facility, outreach consultation and ultrasound services are also provided by Yale's high-risk pregnancy staff at other area hospitals.

Countless families have turned to Yale-New Haven Hospital's high-risk pregnancy specialists for care during pregnancy. While the circumstances and outcomes of every pregnancy can be very different, families can expect exceptional care and the latest technology combined with expert knowledge and experience for the best possible outcome at Yale-New Haven Hospital.

For more information about maternal special care at YNHH, call (203) 888-2800.
On April 14, 2007, Jim Mazziotti and his wife, Christine, were at an “oldies” dance at the Wallingford Elks Club when a frighteningly familiar pain hit Mazziotti in his chest.

"I had been dancing," recalled Mazziotti, 61. "After the last dance, I began to feel lousy. I broke into a cold sweat and had tremendous pressure in my chest."

Although it had been 12 years since her husband’s first heart attack, Mrs. Mazziotti knew the all-too-familiar routine: she dialed 911.

While Mazziotti was on his way to Yale-New Haven Hospital (YNHH), medics alerted the emergency department (ED) that a “big M.I.,” the abbreviation for myocardial infarction, or heart attack, was coming in, putting the ED and the catheterization lab in motion for his arrival.

The standard protocol at YNHH’s emergency department is that any patient complaining of chest pain that appears to be cardiac related moves from the triage desk to an electrocardiogram within 10 minutes. Once the physician evaluation has taken place, a plan for further treatment is usually decided within 30 minutes of the patient’s arrival.

"Every minute that heart cells are deprived of blood flow, they are dying," said Michael Cleman, M.D., director of the cardiac catheterization lab at YNHH. "Once heart cells are dead, they don’t regenerate. So the initial treatment goal is to open the artery as quickly as possible, limiting heart damage."

Once Mazziotti arrived at Yale-New Haven’s ED, he was rushed almost immediately to the YNHH cardiovascular laboratory—staffed 24 hours a day and fully equipped with leading-edge imaging equipment to diagnose and treat coronary artery disease.

Within 15 minutes of his arrival at the hospital, Mazziotti underwent an emergency angioplasty to locate and open the blocked vessel in his left coronary artery, without the need for invasive heart surgery.

Angioplasties are procedures in which a balloon-tipped catheter is inserted through the groin and up into the area of the arterial blockage. As the interventional cardiologist expands the balloon, the plaque is forced up against the arterial wall, opening the vessel. Angioplasty is far less invasive than bypass surgery and is the procedure of choice among cardiologists for many patients.

Mazziotti’s physician, Michael Remetz, M.D., an attending cardiologist at YNHH, along with members of the YNHH catheterization team, implanted a drug-eluting stent—a tiny metal scaffold that is coated with slow-acting medication. Drug-eluting stents help reduce restenosis—the recurrence of the blockage or the narrowing—to one of three blocked arteries. Introduced in 2003, drug-eluting stents have been shown to reduce the rates of restenosis and repeat procedures.

"Mr. Mazziotti had severe blockage in his circumflex artery, which completely obstructed the flow of blood to his heart muscle," said Dr. Remetz, associate professor of internal medicine at Yale School of Medicine. "We opened the critical vessel immediately to minimize damage to his heart and two days later, when he was stable, we opened the other two arteries."

The following day, Mr. Mazziotti went home.

"The heart team reacted terrifically," said Mazziotti. "I couldn’t have been in better hands."

"At Yale-New Haven, our treatment of acute MI is 100 percent geared toward getting the patient and the catheterization lab team together as quickly as possible," said cardiologist Henry Cahn, M.D., medical director of the YNHH Heart Center and its coronary care unit. "We made the decision years ago that we would rely on angioplasty 24 hours a day, seven days a week, to open blocked arteries and we have designed our systems around that goal."
Since 1982, YNHH has consistently been on the cutting edge of new angioplasty techniques including rotational atherectomy, the removal of plaque from the coronary arteries, intracoronary stenting, and gamma radiation trials. "The cardiac catheterization laboratory is one of the premier services at Yale-New Haven Hospital," said Debbie Capone, registered radiologic technologist and manager of cardiovascular labs at YNHH. "The labs provide access to the best combination of people and technology available. We have a friendly and knowledgeable staff whose mission is to provide our patients with the highest quality diagnostic imaging, interpretation and image-guided intervention in a timely and caring fashion." 

Research shows that if a patient's blocked arteries can be reopened within 90 minutes of arriving at the hospital, the risk of dying is cut 40 percent. According to a recent national study, only about one-third of U.S. hospitals provide emergency care quick enough to meet that life-saving standard. YNHH leads the charge in a country-wide hospital effort to reduce the time it takes to deliver emergency angioplasty, known as the "door-to-balloon" time (D2B), it is measured from when the patient enters the emergency department to when angioplasty is performed. YNHH's median D2B time is 85 minutes, well within the American Heart Association's recommended standard of 90 minutes. "Angioplasty is most effective when performed in hospitals that make it the first-line treatment for these heart attacks, rather than at centers where it is not the leading intervention labs at YNHH. "The labs provide access to the best combination of people and technology available. We have a friendly and knowledgeable staff whose mission is to provide our patients with the highest quality diagnostic imaging, interpretation and image-guided intervention in a timely and caring fashion."

Today, Mazziotti, a retired public utility worker, is back doing many of the things he loves: driving, riding his motorcycle, cooking and spending time at the Columbian Social Club in West Haven, where he serves as president. He's altered the recipes for many of his signature foods to include more healthy ingredients and is learning to slow down his daily pace.

"I'm not running as crazily as I used to," said Mazziotti, who coordinates group tours to Las Vegas, Arabia and Italy, his most favorite destination of all. "Although it's been 25 years since Mazziotti smoked, he admits that 25 years of cigarettes, combined with a family history of heart disease, contributed to his wake-up call to live a healthier lifestyle. "My advice to anyone with a genetic predisposition is to listen to the advice of your doctors and take good care of yourself," stated Mazziotti.
Stroke: They call it a brain attack

by Katie Murphy

Hippocrates, the Father of Medicine, called it apoplexy, which meant “struck down violently.” Physicians today often refer to a stroke as a brain attack, in part to convey the urgency of seeking immediate treatment. While awareness of stroke began at least 2,400 years ago, only the past generation has brought viable treatment and real hope to patients.

New Haven Stroke Center, Joseph Schindler, M.D. was called in, but unfortunately by then, Fowler was already outside the window of time for the safe administration of the clot-busting drug, t-PA.

Fowler remembers little of that night when he suffered paralysis on his left side. By Sunday morning, he had regained much of the use of his left side of his body, but his vision was still blurred. He was treated with medication to aggressively manage his blood pressure and was hospitalized for another three days. His symptoms gradually began to subside. After outpatient rehabilitation therapy, and the help of his wife and daughters, Fowler made a miraculous recovery. He was back racing by September.

In six races since his stroke and recovery, Fowler has had many top-five runs and believes it’s just a matter of time until he ends up back in the victory lane.

“One thing I learned was that you don’t always get the best care at the closest place,” said Fowler, “I wish we had gone directly to Yale-New Haven. I could have gotten there within the golden hour.”

Luck had something to do with Fowler’s complete recovery, but so did Yale-New Haven Hospital. Just a year before his stroke, YNHH had become the first hospital in southern Connecticut and only the fourth hospital in New England to be nationally certified as a Primary Stroke Center by the Joint Commission, the national organization that accredits nearly 15,000 U.S. healthcare organizations and programs. This designation recognizes Yale-New Haven Stroke Center’s commitment to providing the highest standard of stroke care, including rapid assessment by a multi-disciplinary stroke team and the most advanced treatment with clot-busting medications.
A stroke is an injury that occurs when blood flow to the brain is disrupted—usually caused by a blood clot that blocks an important blood vessel feeding the brain (an ischemic stroke) or when a ruptured vessel in the brain bursts, spilling blood into surrounding tissues (a hemorrhagic stroke). About 80 percent of strokes are ischemic. Stroke is the third leading cause of death in the U.S., ranking only behind heart disease and cancer; and it ranks second as the leading cause of death worldwide. Strokes kill more than 273,000 Americans each year and are the number-one cause of adult disability and economic hardship. In the United States, someone has a stroke every 45 seconds. For Donald Fowler of Clinton, his 45 seconds came in May 2006. Fowler, a race car driver at the Waterford Speedbowl for 30 years, had finished his weekly Saturday night race and was eager to get home to see the conclusion of his son-in-law’s NASCAR NEXTEL Cup race team on TV. Relaxing on his couch watching the race, he suddenly realized something was wrong, dreadfully wrong. “I couldn’t see straight. I couldn’t focus my eyes at all,” said Fowler. He thought he would just go to bed and see how he felt in the morning, but his wife had other plans. Scared by the sight of her husband’s eyes pointing outward, one to the right and the other to the left, Belinda Fowler had just one question for Don: “Do you want to go by car or ambulance?” She drove him to the closest walk-in clinic. By the time they got there, his speech was slurred and he was extremely tired. Fowler’s wife requested that a neurologist be called in, but it took almost three hours for that to happen. The staff was unable to definitely determine if Fowler was having a stroke and he was then transferred by ambulance to Yale-New Haven Hospital, where he underwent CT scans and an MRA. Doctors discovered a blood clot in his brain and that he was in fact having an ischemic stroke. The director of the Yale-New Haven Stroke Center, Joseph Schindler, M.D., was called in, but unfortunately he, Fowler was already outside the window of time for the safe administration of the clot-busting drug, t-PA.

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Steven Bushnell, 51, of Old Saybrook, got to Yale-New Haven in time. Bushnell was the least likely person to have a stroke—he was young, fit, and had good cholesterol and blood pressure. An eighth-grade teacher in the Lyme-Old Lyme Middle School, he exercised every day, plus coached middle school basketball and track and field at the high school in Old Lyme. But on October 1, 2006, he collapsed without warning at home. His wife Gretchen called an ambulance and instructed them to take him to Yale-New Haven Hospital.

"We could have gone to a closer hospital, but we'd always had a good experience at Yale-New Haven. And we knew this was serious," recalled Steve, who was alert the whole time, but unable to move. "I remember telling the EMT I was certain it was a stroke." Bushnell was right. But he was lucky—he arrived at the YNHH emergency department well within the three-hour window of time to receive the clot-buster t-PA, and he was eligible for it. By this time, he had regained some of his ability to move and speak.

"I remember responding to questions from the doctor—I was unable to count backwards from 20 by fives, and I told them the year was 1998," he said. Doctors estimated that he might be able to return to work in three to five months, but that he might never regain full use of his left side. After receiving t-PA, Bushnell remembers practicing all night and then surprising everyone by lifting his arm and leg the next day. He was walking within three days, out of the hospital in five days, and back to work in two weeks.

"I am very glad to have gone to Yale-New Haven. Doctors, nurses and staff were all fabulous," said Bushnell. "It was a very professional, caring and supportive atmosphere."
So education is key to stroke prevention. Most strokes don’t really come out of nowhere—they are actually the result of an accumulation of years of underlying vascular disease related to inadequately addressed risk factors. So education is key to stroke prevention.

Warning Signs of Stroke:

- Sudden numbness or weakness of the face, arm or leg, especially on one side of the body
- Sudden confusion, trouble speaking or understanding
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, loss of balance or coordination
- Sudden, severe headache with no known cause

YNHH also offers the latest surgical treatments and neurovascular interventional radiology procedures for the treatment and prevention of stroke, such as carotid endarterectomy, carotid stenting, cerebral aneurysm surgery, clipping and ballooning.

"Stroke care has improved dramatically in recent years," said neurologist Norman Werdiger, M.D. "We now have effective acute interventions and can aggressively manage strokes, which has finally helped minimize the damage. But I think one of the greatest changes has been in the area of prevention. We know that if we successfully manage the risk factors for stroke, then we can reduce the incidence of both first stroke and recurrent stroke."

Risk factors for stroke include many of the same risk factors for heart disease—hypertension, high cholesterol, smoking, excessive use of alcohol, being overweight, having a sedentary lifestyle and elevated blood sugars from poorly managed diabetes. More recently, hospitals around the country have been seeing more and more strokes related to the use of "recreational" drugs like cocaine and amphetamines.

"The best thing a person can do to prevent a stroke is to take an active role in managing his or her own health and lifestyle," said Dr. Werdiger. "Unfortunately, most people don’t take that message seriously until after they’ve had a stroke. Typically, the precursors to stroke and heart disease smolder along quietly for years and years. Most strokes don’t really come out of nowhere—they are actually the result of an accumulation of years of underlying vascular disease related to inadequately addressed risk factors. So education is key to stroke prevention."

"The public is generally not aware of the signs and symptoms of stroke," she said. "The first line of defense is to prevent a stroke but if one develops symptoms, we want people to know the signs and get help immediately." Dr. Werdiger and her team of neurologists are dedicated to helping educate people about stroke and its warning signs. "Part of our job is to educate people about stroke, help pinpoint their modifiable and non-modifiable risk factors and help them develop an action plan so they can avoid having a stroke."

"The best thing a person can do to prevent a stroke is to take an active role in managing his or her own health and lifestyle," said Dr. Werdiger. "Unfortunately, most people don’t take that message seriously until after they’ve had a stroke. Typically, the precursors to stroke and heart disease smolder along quietly for years and years. Most strokes don’t really come out of nowhere—they are actually the result of an accumulation of years of underlying vascular disease related to inadequately addressed risk factors. So education is key to stroke prevention."

Stroke 17
Viewing research as opportunity and hope

For patients who are not eligible for intravenous t-PA, Yale-New Haven offers clinical trials that are not available at community hospitals. For some patients who have passed the three-hour window but are still within a six-hour window, one clinical trial compares the effects of refined snake venom, Ancrod, a type of clot-busting drug, to that of placebo. YNHH was just approved in April 2007 to participate in this trial, said Janet Halliday, R.N., the clinical research nurse who oversees Yale-New Haven Stroke Center’s clinical trials. “While this is not yet FDA-approved and it is not the standard treatment, it is an option for some patients. We are trying to find new ways to help people who are not eligible for t-PA,” she explained. Should a patient not be eligible for intravenous t-PA or a clinical trial, YNHH has the ability to administer t-PA intra-arterially, in a procedure similar to cardiac catheterization.

“The act of just breaking up the clot and restoring blood flow is not enough — although about one-third will get better,” said Dr. Schindler. "Once there is cell damage, the cells release protein, and there is an inflammatory reaction which can have an added negative effect on the brain.”

YNHH is looking at ways to minimize this damage by using new drugs to protect the surrounding areas in the brain from the effects of a stroke. To date, no such “neuroprotectant” drug has been found effective or approved by the FDA, but the search is still relatively new. YNHH’s neuroprotectant trial uses a human protein called albumin — something that has been used in medicine for other purposes. “Neuroprotectants can suppress this inflammatory reaction and help protect neurons and neurological tissue that have not died yet,” explained Dr. Schindler, who is the principal investigator for both the neuroprotectant trial and the Ancrod study. “I view research as opportunity and hope,” said Halliday. “You can’t really work on recovery if you don’t have any hope.”

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**EVERY 45 SECONDS SOMEONE IN THE UNITED STATES SUFFERS A STROKE.**

NATIONALLY, STROKE IS THE THIRD LEADING CAUSE OF DEATH AND A MAJOR CAUSE OF DISABILITY AND ECONOMIC HardSHIP. **DO NOT DELAY. EVERY SECOND COUNTS IN TREATING STROKE.** GET TO A HOSPITAL FAST TO IMPROVE CHANCES OF SURVIVAL AND TO MINIMIZE PHYSICAL AND MENTAL DISABILITIES OF STROKE.

THE MOST COMMON SYMPTOMS OF STROKE CAN EASILY BE REMEMBERED BY THE LETTERS *F-A-S-T*, REPRESENTING THE SUDDEN ONSET OF:

**F**acial numbness, weakness, drooping or unsteady
**A**rm or leg numbness or weakness
**S**peech disturbance, trouble speaking or understanding
**T**ime to call 911

YNHH Stroke Center:
(203) 737-1057
Nyir Chapman, who was almost 2, was visiting a specialist for a chronic lung infection when the doctor began asking his mother what seemed to be unrelated questions: "Is he getting enough sleep? Does he snore? Is he waking up during the night?"

Not only did Nyir snore, he was having nightly episodes of interrupted breathing so frightening that his mother, Ingrid Davis, had been propping him up in bed, watching him sleep and going to work exhausted.

Sleep problems skyrocket
Sleep disorders are on the rise— affecting an estimated 25 percent of children and teenagers, according to the National Sleep Foundation. While most children's sleep problems get better on their own, researchers are finding that children who need treatment and don't get it may eventually face more serious problems, including predisposition to cardiac disease and diabetes when they grow up.

"I've seen a surge of interest in pediatric sleep disorders in the last few years, which is a positive development," said Dr. Bhargava, an assistant professor of pediatrics in the section of respiratory medicine at the Yale School of Medicine. "There has been enough research in adults to show that sleep is essential to good health, and when it is obstructed by a disease, obesity or some other problem, it can lead to serious effects. Our goal is to diagnose and treat sleep problems early in life so that these children will grow up to be healthy adults."

Two-and-a-half years ago, when Dr. Bhargava arrived at Yale, YNHH expanded the pediatric sleep center it opened in 1989 to include a two-bed sleep laboratory with a state-of-the-art comprehensive polysomnographic monitoring system, five sleep technologists with experience in helping children relax, and the ability to perform sleep studies six nights a week. Evaluations and follow-ups are provided twice a month at a clinic for patients from newborns to 18-year-olds.

Despite all this attention, there are still many children with sleep problems who are not changing their poor sleep habits or getting medical help when they need it. In fact, Dr. Bhargava believes the nearly 200 children he has seen since he arrived in 2004 represent the "tip of the iceberg" in Connecticut. "It's imperative that all pediatricians start asking questions about sleep during routine visits, and that all parents learn about the symptoms of sleep disruption," he said.
OBESITY
SNORING
TALKING
SLEEP
deprivation, and negatively impacts learning ability and school performance, it has more recently been linked to behavior and developmental problems. In fact, "the Children's Hospital, OSA is found in the sleep laboratory in many as Obstructive sleep apnea (OSA) is the most common diagnosis, affecting an estimated 2 to 3 percent of children and teenagers in the United States. At Yale-New Haven researchers have known for years that OSA leads to interrupted breathing and oxygen it sees a month and is especially prevalent among children who are obese. While re­ said. "We are willing to do whatever it takes in order to do the sleep study in an appro­ priate and comfortable way."

sleep study the first time around, so we bring them back a second time," Dr. Bhargava
physician generates a formal report with recommendations for the child's pediatrician. If one parent spend the night with them on a separate cot.

At YNHCH, overnight polysomnograms or "sleep studies" are performed in the pediatric sleep laboratory on the 7th floor of YNHCH. Families arrive between 5 and 7 p.m., and may bring their own blankets, pillows and stuffed toys. Patients may have a patient spend the night with them on a separate cot.

Between 8:30 and 10 p.m., a sleep technologist comes in to gently apply up to 26 electrodes from head to toe to monitor brain waves, heartbeat, eye movements, breathing and blood oxygen levels, among other things. Once the patient falls asleep, the technologist goes to a computer room where monitors track the patient throughout the night. The data is collected and then analyzed. Later, the physician generates a formal report with recommendations for the child's pediatrician.

"Sometimes you have children who are so uncomfortable that you can't do the sleep study the first time around, so we bring them back a second time," Dr. Bhargava said. "We are willing to do whatever it takes in order to do the sleep study in an appropri­ate and comfortable way."

Treating obstructive sleep apnea is critical
Obstructive sleep apnea (OSA) is the most common diagnosis, affecting an estimated 2 to 3 percent of children and teenagers in the United States. At Yale-New Haven Children's Hospital, OSA is found in the sleep laboratory in many as of 40 children it sees a month and is especially prevalent among children who are obese. While re­searchers have known for years that OSA leads to interrupted breathing and oxygen deprivation, and negatively impacts learning ability and school performance, it has more recently been linked to behavior and developmental problems. In fact, "the cognitive effects of untreated apnea may be far more damaging in children than in adults because they occur during a critical period of brain development," Dr. Bhargava said.

Research at Yale and elsewhere is showing obesity to be a major risk factor in OSA, and when children with OSA lose weight, their symptoms often ease, Dr. Bhargava said. "In the sleep lab, we are finding that children who are obese and have obstructive sleep apnea can have disruptions of their hormonal function that can predispose them to developing diabetes, and we were actually able to pick that out in some teenagers. That's an age when you can still do something to prevent the progression to full­blown diabetes."

The YNHCH sleep center staff has seen cases of OSA that are so serious they have admitted the patients to the hospital immediately for surgery to remove tonsils and adenoids, which is the most effective treatment. Even after surgery, some OSA patients are prescribed a continuous positive airway pressure (CPAP) machine. Through a face mask that is worn during sleep, this machine — known to some as a "sleep apnea machine" — forces air into the nasal passages at pressures high enough to overcome ob­structions and stimulate normal breathing. "CPAP for children is very difficult, but it's not impossible," said Christine Bailey, lead sleep technologist at YNHCH, who sometimes finds it challenging to fit a CPAP mask to a small patient. "The one thing that makes it easier to give CPAP to a child is having parents to back us up," she said.

Rare disorders wreak havoc
Some other sleep disorders may be rare, but important to diagnose. For example, narcolepsy — a chronic neurological disorder caused by the brain's inability to regulate sleep-wake cycles normally and characterized by excessive day­time sleepiness — has a prevalence of about 1 percent in the United States and incidence peaks in adolescence. However, the majority of cases are not diagnosed until the fourth or fifth decade of life.

Nobody in Preasha Nu­man's family suspected narcolepsy when they began seeking a diagnosis for a range of complaints. At 12 years old, Preasha, who lives in Bridgeport, would nod off within minutes of getting in a car, was perform­ing poorly in school and generally felt miserable. A new pediatrician finally referred her to the YNHCH sleep center, where technologists watched her reach deep sleep within seconds. Preasha was diagnosed with OSA, and Dr. Bhargava confirmed narcolepsy with further test­ing. After several months of treatment with drugs and a CPAP machine, Preasha's life turned around as she lost 30 pounds and even came home with an A+ in math.
**Teaching kids “sleep hygiene”**

Meanwhile, Dr. Bhargava is concerned about what he calls “poor sleep hygiene,” which he said is a major factor in the behavioral disorders of sleep, including sleep walking, sleep terrors, night terrors and the inability to fall asleep or stay asleep. The seeds of these disorders are often planted in the first years of life when many families are lenient about sleep routines.

Adolescents and teenagers who have never developed appropriate sleep habits begin putting sleep at the bottom of their priority list so they can have more time for recreation or schoolwork. “Teenagers have a problem that is especially destructive because of the discrepancy between their biological clock and the time of their first class at school, which may be very early in the morning. Many also have very busy days, especially when they have jobs after school and work on weekends. It affects not only their performance in school, but their time outside of school, and it causes them to drive drowsy and have accidents, which can be fatal,” he said.

“The bottom line is that sleep is a good habit that is to be learned by a child, just like brushing their teeth, taking a shower or eating with a knife and fork,” said Dr. Bhargava. “When parents understand what a healthy sleep routine looks like, they will be more likely to spot a sleep disorder and seek out treatment early. That is why it is so important for pediatricians and families to take sleep seriously and make it part of the conversation during well-patient visits beginning in the first year of life.”

**“The bottom line is that sleep is a good habit that is to be learned by a child, just like brushing their teeth, taking a shower or eating with a knife and fork.”**

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**TIPS FOR GETTING CHILDREN TO SLEEP**

**Newborns (1-2 months)**
- Observe baby’s sleep patterns and identify signs of sleeplessness.
- Put baby in the crib when dozing, not asleep.
- Place baby to sleep on higher back with face and head clear of blankets and other soft items.
- Encourage nighttime sleep.

**Infants (3-11 months)**
- Develop regular daytime and bedtime schedule.
- Create a consistent and enjoyable bedtime routine.
- Establish a regular “sleep-friendly” environment.
- Encourage baby to fall asleep independently and to become a “self-soother.”

**Toddlers (1-3 years)**
- Maintain a daily sleep schedule and consistent bedtime routine.
- Make the bedroom environment the same every night and throughout the night.
- Set limits that are consistent, communicated, and enforced. Encourage use of a security object such as a blanket or stuffed animal.

**Preschoolers (3-5 years)**
- Maintain a regular and consistent sleep schedule.
- Have a relaxing bedtime routine that ends in the room where the child sleeps.
- Child should sleep in the same sleeping environment every night, in a room that is cool, quiet and dark – and without a TV.

**School-age children (5-12 years)**
- Teach school-age children about healthy sleep habits.
- Continue to emphasize need for regular and consistent sleep schedule and bedtime routine.
- Make child’s bedroom conducive to sleep – dark, cool and quiet.
- Keep TV and computers out of the bedroom.
- Do not allow children to consume caffeine.

Source: National Sleep Foundation. For more tips on healthy sleep, visit their Web site at [www.sleepfoundation.org](http://www.sleepfoundation.org)

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