Brain basics
Rhea Hirshman, editor with Duarte Machado, MD, YHP neurologist

The human brain doesn’t look like much. Weighing in at only about three pounds, it could be described as a big, gray sponge with lots of wrinkles. But underneath that exterior is an organ of amazing complexity, whose regions and parts function intimately together to create the processes and capacities that make us human.

Basic brain geography
• The cerebrum (also called the cerebral cortex) is the largest part of the brain, making up about 85 percent of the brain’s weight. Its functioning is divided into right and left hemispheres, with each hemisphere controlling the opposite side of the body. The left hemisphere is also the predominant language center, and controls more concrete thought processes, while the right controls more abstract processes. The two hemispheres, which are linked with a thick band of nerve fibers, have specialized areas called lobes. Among its other functions, the cerebrum controls voluntary muscles, is the repository of both short-term and long-term memory, and integrates information from all the sense organs. It also controls emotions and is the site of perception, imagination, thought, judgment, and decision-making.

• The cerebellum, at the back of the head below the cerebrum, is about an eighth of the cerebrum’s size. It controls balance, movement, and coordination. It is also involved with integration of visual input for depth perception.

• The brain stem sits beneath the cerebrum and in front of the cerebellum. It connects the rest of the brain to the spinal cord, which runs down the neck and back. The brain stem controls involuntary muscles involved in functions like digestion, blood circulation, and breathing. It also sorts through the millions of messages that the brain and the rest of the body send back and forth, and controls reflexes and limb movement.

• The hypothalamus, located just above the brain stem, is responsible for certain metabolic processes and other activities of the autonomic (involuntary) nervous system. The autonomic nervous system has a role in controlling functions such as heart rate, digestion, respiration rate, salivation, perspiration, pupil dilation, urination, and sexual arousal. It also controls body temperature, hunger, thirst, fatigue, and circadian rhythms (the “biological clock”).

• The pituitary gland is located at the base of the brain, and is referred to as the “master gland” because it controls the function of the endocrine glands, such as the thyroid gland and the adrenal glands, telling them to produce hormones needed for normal bodily function; it also controls the growth hormone, and is responsible for normal development, including puberty.

From the start, babies’ brains are hard at work
JoAnne Burger, MD, Pediatrics

Brain development in the first year of life is simply astonishing. Parents bring home from the hospital a creature who is dependent on them for what can often seem like everything, and yet those neonates emerge by the end of the first year as babbling, mobile youngsters, eager to express their own opinions and desires.

In the first year of life the brain weighs about one quarter of its adult size and begins the process of developing myelin (myelination). Myelin is a fatty insulation that surrounds nerve cells and helps to send messages quickly. There are dramatic changes in gray and white matter distribution, and the overall brain architecture markedly increases in complexity during this time. Billions of synaptic connections will develop in the first three years. Synapses are tiny gaps between nerve cells across which these cells send chemical messages. We know that caregivers can significantly influence this critical developmental period.

The capacities of the infant are pretty impressive to begin with. Although the visual system is not fully developed at birth, newborns can definitely see and there seems to be an innate preference for looking at their caregivers.
What’s in a Brain?
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A stroke is a brain attack
Duarte Machado, MD, neurologist with YHP, explains that stroke is an abnormality of blood flow to part of the brain. “The two kinds of stroke are ischemic stroke, which is caused by a reduction in blood flow and the attendant lack of oxygen, and hemorrhagic stroke, in which blood spills out into brain tissue. Ischemic stroke is usually caused either by a stationary obstruction in a blood vessel (thrombosis) or by a blood clot that moves and gets stuck somewhere in the circulatory system (embolism).” He continues “Hemorrhagic stroke occurs when a blood vessel breaks on the brain’s surface, allowing blood into the area between the brain and the skull, or when a diseased artery bursts inside the brain, flooding it with blood.”

Keeping your brain healthy
Machado notes that we can make lifestyle choices that will help keep our brains healthy, both reducing risk of stroke and helping maintain cognitive abilities. These include not smoking, limiting alcohol consumption, and maintaining a healthy weight—all of which have an impact on the health of blood vessels, including those in and around the brain. “Also,” he adds, “mental and physical exercise are essential. Physical exercise increases blood flow to the brain. And, while we are born with all the neurons we will ever have, mental exercise can help us develop new synapses. Adequate sleep is also critical; lack of sleep impairs cognitive ability, particularly as we age.”

Q&A
questions, answers

BEHAVIORAL HEALTH

Our new behavioral health benefit went into effect January 1, 2010. It offers treatment for covered mental health conditions through a local network of professionals designed for Yale Health Plan in partnership with Magellan Health Services, a nationwide leader in mental health care. Preauthorized care from a network provider is now covered at 100%.

Q. How do I access behavioral health services?
A. You can access services 24 hours a day, seven days a week by calling Magellan at 800-327-9240; TDD 800-456-4006.

Q. What do I do after my initial phone call to Magellan?
A. When you speak to Magellan they will determine if the care you need falls under Counseling and Support Services, or our behavioral health benefit. In either case, they will give you the names and numbers of a few network providers to contact. After contacting the providers and mutually deciding who is a good fit, call Magellan to let them know the name of your chosen provider and to precertify your care.

Q. How do I get an appointment when I need one from the list of providers given to me?
A. Please call Magellan 800-327-9240 and ask for help in getting an appointment.
from the desk of

MORESON KAPLAN, MD
ASSOCIATE DIRECTOR FOR MEDICAL AFFAIRS

the new Yale HEALTH Center...melds state-of-the-art technology with a commitment to the...needs of our patients and staff for comfort, privacy, and ease of access.

Moreson Kaplan has been associated with YHP since we opened our doors in 1971 and this fact has given him a unique perspective on the institution, the people who work here, and the people it serves. He first came to YHP as an internist, was chief of Internal Medicine from 1976-1984, and medical director from 1979-1982 and again from 1990-2001. He continues to practice medicine and, since 2001, has been associate director for medical affairs and chief of Surgical Specialties. He offers these thoughts on the move to the new Yale HEALTH Center.

I am one of only two people still on staff at YHP who has been involved in the planning and construction of both 17 Hillhouse Avenue and the new Yale HEALTH Center at 55 Lock Street (ed. note: the other is Lorraine Siggins, MD, chief of Mental Health and Counseling). As we move to our new home, I want members and staff to know that, in its day, 17 Hillhouse was a bright, modern facility. It was both a huge improvement over the old Department of University Health on College Street and the embodiment of an entirely new concept in the delivery of university health care: a multispecialty group practice that offered students, employees and their families a wide range of services under one roof.

Yale Health Plan was the first comprehensive, prepaid medical care program in the country offered to an entire university community.

We opened in 1971 with about 12,000 members in a building designed to accommodate an eventual membership of 25,000. The building has served us well; as membership grew to exceed that figure we have managed with renovations and reconfigurations. But now, with membership over 33,000, we have had to move forward with the planning and construction of an entirely new building. This new facility provides the capacity to incorporate a range of technological advances, as well as the opportunity to address what became deficiencies as 17 Hillhouse aged, technology advanced, and our membership expanded.

The new building provides more than twice as many exam rooms and an impressive amount of light and space. Members will notice right away that the design fosters greater privacy for individual encounters and confidentiality for all transactions from front (reception areas and waiting rooms) to back (exam and treatment rooms). Patients will now be served on site by new modalities such as an MRI and the capacity to perform minor surgical procedures under conscious sedation.

We have rearranged the siting of several departments for improved patient and clinician access. For instance, Medical and Surgical Specialties will be combined into a single Specialties Department on the second floor, adjacent to Ob/Gyn and with treatment and procedure rooms located between them so they can be used by either surgery or gynecology as needed. The building is electronically equipped for up-to-date communication, and we will be making full use of the electronic medical record (EMR), which has become an invaluable tool. Conference space on the first floor will enable us to present educational programs open not only to our members but also to the community (we already offer some community education programs such as EMT training and cancer awareness lectures).

What pleases me particularly about the new Yale HEALTH Center is that it melds state-of-the-art technology with a strong commitment to the most basic needs of our patients and staff members for comfort, privacy, and ease of access. We look forward to seeing you there.
The teenage brain is a work in progress
Michelle N. Brei, APRN, CPNP, Pediatrics
Neuroscientists...have now determined that significant brain growth and reorganization occur during the teenage years.

Parents are often bewildered by the workings of the teenage mind. Research is shedding new light on how the adolescent brain functions and develops. Magnetic resonance imaging (MRI) technology has allowed us to see how the brain is “wired” across the lifespan. Teenagers do indeed have brains that operate differently than those of adults, and the brain’s maturation processes take much longer than previously thought. Neuroscientists formerly believed that the brain was fully developed by adolescence, but have now determined that significant brain growth and reorganization occur during the teenage years.

Teenagers have frontal lobes (the part of the brain responsible for impulse control, reasoning, and judgment) that are still being connected to the rest of the brain. Teens have less myelin in this part of the brain than adults. Myelin is the fatty insulation that allows nerve cell impulses to travel quickly from one part of the brain to another. Therefore, adolescents access the part of the brain that considers consequences more slowly than adults do. This is thought, in part, to explain why teenagers frequently engage in high-risk behavior.

Imaging also suggests differences in the way teens process emotional information. When compared to adults, they appear to rely more on the amygdala (a temporal lobe structure associated with emotional processing) to interpret emotional data than on the rational thinking frontal lobe. Researchers hypothesize that this could be why teenagers sometimes have difficulty regulating emotional reactions. Neuroscientists have recently discovered that brain cell production, previously thought to occur only in babies, occurs also in adolescence, when a second burst of brain cell production and connection is followed by a pruning process. The connections (synapses) that are used become strengthened by myelin, while those that are not used fade away. Experts speculate this means that teens’ habits and behaviors during adolescence affect the way brains are wired in adulthood.

Babies’ brains continued from page 1

The focal length or the distance which allows a newborn to see with the best acuity is about ten inches—just about the distance from a baby’s face to its parent’s face as the infant is cradled in a feeding position. Furthermore, research has shown that newborn babies have a preference for looking at faces over other random black and white patterns.

By two months a baby can distinguish among several colors and at six months a baby can focus at different distances and appreciate depth. While babies are programmed to be particularly attuned to human stimuli and prefer the human voice, face, touch, and smell over everything else, adults also seem to be almost hardwired to want to protect, nurture and care for their young offspring.

The urge to sing, hold and touch our newborns provides just the right kind of stimulation and experiences to promote good brain growth and development.

In our fast-paced society, parents often want to buy the right toys or do just the right activities to make their babies “smarter” faster. Scientists have no tricks for us and research suggests that “make your baby smarter” materials are not particularly effective. However, studies have shown that one area of development which can be stimulated by caregiver behavior is language. Infants and children who are read to and who consistently experience rich and varied verbal exchanges show somewhat better verbal skills than children raised with fewer verbal exchanges. So listening to your child and talking to her, as well as being a pleasure, is one of the most important parental actions for enhancing cognitive development.

Brain growth and development are also critically dependent on the quality of the child’s nutrition. Brain growth is best promoted by the type of nutrients and fats afforded by a diet of breast milk. Adding iron in the second six months of life (often in the form of fortified infant cereals) allows for the adequate functioning of red blood cells, which further help to nourish and promote brain growth. Babies who are bottle fed should be given formulas containing iron. In their second year, babies should drink whole milk, which provides plenty of protein and the
For example, teens who spend time doing creative arts, academics, and athletics are hard-wiring their brains for those activities. In contrast, adolescents who don’t “work” those parts of the brain appear to be missing an opportunity to build aptitude for them.

The latest knowledge on the adolescent brain also has implications for the way alcohol and other psychoactive drugs, such as marijuana, affect teenagers. The changes going on in the evolving teen brain seem to make it more susceptible to the drugs’ negative effects on learning. Adolescent brain cells are impaired longer by these substances than are those of adults, and ongoing use can have chronic, life-long effects. Studies have shown that teenagers were still intellectually impaired by marijuana even days after smoking it.

The implications of these recent findings about the teenage brain are still being explored. While there is still much to learn about the adolescent brain, those who care about teens should encourage them to think about how they wish to foster their developing brains, and emphasize the importance of protecting them.

extra fat which helps in the critical myelination of brain cells. After two years of age, toddlers can move towards a more heart healthy diet of lower fat milk and other nutritious foods.

Recent research has focused on the intricate interplay of genetics, experience, nutrition and metabolism on the development of the human brain. The first three years of life is a time of extraordinary change and development in which the plasticity of the brain is most apparent. However, brain development continues through the pre-school years. By age 5, the brain is approximately 90% of its adult weight. The process of myelination continues throughout childhood and adolescence and is associated with increasing complexity and specialization of the different areas of the brain.

New Pharmacy set to open its doors

Pictured above is the front of the new Yale HEALTH Pharmacy at 55 Lock Street. During the year or so after Yale Health Plan opened its doors at 17 Hillhouse Avenue in 1971, we were filling an average of 100 prescriptions daily and serving about 12,000 members. Now, our staff of nine pharmacists, seven pharmacy technicians and two customer services representatives serve over 33,000 members, with an average of 725 prescriptions filled daily. At peak times, that number can rise to over one thousand per day.

PHYSICAL THERAPY SERVICES

We are pleased to announce a new partnership with Temple Health Services. Temple will be providing all of our physical therapy services as of September 1, 2010. This relationship will provide better access to physical therapy services for our patients. Partnering with Temple provides our patients with the same high quality physical therapy they have grown accustomed to with Yale Health Plan but now with more timely access and the convenience of multiple sites for appointments.

Temple Health Services offers appointments at the following locations:

- 55 Lock Street, New Haven
- 230 George Street, New Haven
- 444 Foxon Road, East Haven
- 680 South Main Street, Cheshire

There is no change to the benefit; you will still need prior authorization for physical therapy services. The changes you will find are that you might be receiving physical therapy at a location closer to your home or workplace, and that you will be able to start your physical therapy sooner. We are looking forward to providing more timely and convenient appointments at a savings that we pass along to our members in our low premiums.
We’re moving! August 23–September 14
Judith Madeux, APRN, MS, MPH, Deputy Director

The time has arrived! We will start our move to the new Yale HEALTH Center at 55 Lock Street on Monday, August 23rd and finish on Tuesday, September 14th. Most of the moving will occur during weekends, evenings, and at night.

The first steps leading up to this moment were actually taken 15 years ago, when Yale University administration, along with Yale HEALTH administration undertook the first of several physical space evaluations. In late 2004, the decision was made that 17 Hillhouse Avenue, even with modifications, could no longer meet our needs. A design competition resulted in the University Design Advisory Committee’s selecting Mack Scogin Merrill Elam as the building design architects. Input on the design of clinical spaces was provided by health care architect Perkins and Will, working closely with all clinical department managers and physician chiefs. At the same time, a University steering team, a Yale HEALTH steering team, and six multi-level and multi-disciplinary workgroups worked on the planning and oversight of all phases of the design, function and operation of the new building.

By the time you read this, the move will be just over a month away, and I want to tell you that “breath-taking” was the word that came to mind when we walked into the lobby atrium for the first time in May, after the scaffolding was removed. I was struck by the natural light, the warmth of the design, and the sense of healing built into all the details that had been so long in the planning. I am eager for our staff and patients to have this same experience.

From start to finish, staff at all levels have been involved in this project (workflow groups were composed of clinical staff, managerial/professional staff, and staff from Local 34). As senior leader of the project, I want to recognize particularly our functional project manager, Christa Mrowka. She has worked diligently to integrate all the pieces and is partnering with our move coordinator, Shellie Anello from University Facilities, to insure a smooth transition.

In early August, you will receive by mail a detailed guide to the new facility including a complete schedule, by department, of the move process. Included also will be driving, shuttle and parking directions. The new parking facility will be available on the first day of operation. You may also stay tuned by visiting www.yale.edu/yhp.

Urgent Care to become Acute Care

With our move to the new Yale HEALTH Center, Urgent Care will be renamed Acute Care. The new Acute Care department will continue to provide the 24-hour access you value from Yale HEALTH. The name change reflects our new emphasis on giving prompt and expert care to those with more serious illnesses and injuries. Examples of problems that will be treated in Acute Care include fainting, chest pain, trouble walking, difficulty breathing, severe abdominal pain, head injury, and trauma. We will arrange for prompt transfer to the Emergency Department at Yale-New Haven Hospital when necessary.

Patients with less serious illnesses and injuries will be cared for in their primary care departments by the care team that knows them best. Examples of problems that are best managed by your primary care team include sore throat, earache, sinus symptoms, urinary tract infection, nausea, rashes, fever and flu-like symptoms, strains and sprains. In anticipation of this change we now have more same-day appointments available in our primary care departments.

Whenever you need care, CALL FIRST before you walk in so that we can help you avoid unnecessary waits and inconvenience. We’ll make sure you get to someone who can take care of your needs quickly and effectively, whether in your primary department, Acute Care, or the hospital Emergency Room.
**MAKING THE ROUNDS**

**HEALTH AND WELLNESS INFORMATION FROM YHP’S CLINICAL STAFF**

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**What do I need to know about caring for my baby’s teeth?**

Dental caries affects over 40% of children by kindergarten. Children with caries (tooth decay) are at much greater risk of adult cavities, so focus on dental care as soon as the first tooth begins to appear. When that happens, brush twice daily using a soft, age-appropriate-sized toothbrush. Non-fluoridated “training toothpaste” or children’s fluoridated toothpaste may be used for children younger than two. If using fluoridated paste, use only a tiny smear, as ingestion of too much fluoride could lead to enamel discoloration. For children ages two to five, disperse a pea-size amount of fluoridated toothpaste and perform or assist your child’s toothbrushing, since young children do not have the physical coordination to brush their teeth effectively.

Start weaning your baby from the bottle around the first birthday. Make sure that you brush your baby’s teeth after having his evening bottle. To avoid “bottle caries,” children should not fall asleep with bottles containing anything other than water. Drinking juice from a bottle should be avoided altogether; fruit juice should be offered only with meals or snacks to avoid bathing the teeth with sugar throughout the day.

Fluoride occurs naturally in some foods and is also added to drinking water in many municipalities. If you drink well water, or you do not give your baby fluoridated tap water by six months of age, you should give a daily prescription fluoride drop, which can be prescribed by your pediatrician or dentist.

*Michelle Serlin, MD, Pediatrics*

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**What exactly is “heartburn” and how is it treated?**

“Reflux” is a term used for a constellation of symptoms—the most frequent being what is usually referred to as “heartburn” (also referred to as GERD—gastroesophageal reflux disease). It is very common, occurring chronically in up to half the adult American population. Reflux occurs when stomach acid goes up into the esophagus and causes heartburn (a burning feeling in the center of the chest)—as well as acid regurgitation, belching, chest pain, coughing, laryngitis, and asthma.

Risk factors for GERD include: obesity; smoking; caffeine consumption; and consumption of alcohol and chocolate.

If you experience reflux symptoms of any duration, recommended lifestyle modifications may include: avoiding coffee, chocolate, alcohol, peppermint, onion, garlic; avoiding lying down for three hours after a meal; smoking cessation; decreasing fat consumption; reducing weight; and elevating the head of your bed.

Consult your clinician if symptoms do not respond within a few weeks; if they recur on a regular basis; or if you experience “alarm” symptoms such as pain or difficulty with swallowing, unintentional weight loss, vomiting, or anemia.

*Elizabeth B. Muskin, MD, Internal Medicine*

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**What do I need to know about buying sunglasses?**

Exposure to the sun can contribute to eye diseases including cataracts and age-related macular degeneration; effects of exposure to UV (ultraviolet) radiation can be cumulative over one’s lifetime.

Sunglasses should block 99 to 100 percent of both UVA and UVB rays; this information is usually on the label. Tint color and darkness do not indicate degree of UV protection. The tint does affect the amount of visible light coming through the lenses. You should check to see that your sunglasses block 75 to 90 percent of visible light.

Select the tint based upon activities. Reading outside may call for a lighter tint or a gradient tint (lenses are darker on top and gradually become clear at the bottom). For water sports where there is direct as well as reflected sunlight, consider a darker tint. A gray tint is less likely to cause color distortion. An amber or yellow tint will make objects look brighter and more distinct. Other options include polarized lenses that reduce glare by eliminating light that enters the eye along the horizontal meridian. These are preferred for activities such as driving, water sports, and skiing.

Impact-resistant lenses are recommended for children and those participating in sports or potentially hazardous outdoor activities. Wrap-arounds filter light from the sides and front. Photochromic lenses change from light to dark when exposed to sunlight, and can be a convenience for prescription eyeglass wearers.

*Suguru Imaeda, MD, chief of Dermatology*

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**To submit your questions to Making the Rounds**

e-mail member.services@yale.edu
Please remember that parking for YHP members is available both in the lot right next to 17 Hillhouse Avenue and in parking lot 37, just across Trumbull Street.

COMING IN FALL 2010

A new home and a new name

INTRODUCING

Yale Health

Celebrating 40 years of excellence in health care, Yale health will open the doors to a new, state-of-the-art facility designed to provide enhanced services, comfort and convenience all under one [dramatic] roof.

For directions and more information, visit www.yale.edu/uhs

EVENTS AND CLASSES

Pediatrics Department offers classes for new parents

The newborn education class is an opportunity for new parents to learn about the Pediatrics Department and the basics of newborn care. Led by Michelle Brei, APRN, CPNP, the class meets on the second Thursday of each month from 6:00–8:00 p.m.

The breastfeeding education class presents the basics of breastfeeding and successful nursing techniques. Led by Cris Donovan, RN and Sue Walkley, RN, both registered lactation counselors, the class meets on the fourth Thursday of each month from 6:00–8:00 p.m.

Classes are open to women in the 3rd trimester whose babies will be YHP members. Partners are encouraged to attend, but children are not. You can register for either class by calling the Pediatrics Department at 203-432-0206. Classes will not meet in July and August, but will start up again in September.

Along with the breastfeeding and newborn classes, YHP has three certified lactation counselors on staff to assist all our breastfeeding moms: Cris Donovan, RN in Pediatrics; Sue Walkley, RN in Ob/Gyn and Beth Reilly, APRN in Care Coordination.