The promise of modern medicine is often one of a second chance, the possibility to survive a potentially fatal medical condition and live a full life. This is certainly true in the field of cardiology, where advancements in techniques and technology are saving people with serious prognoses.

Ablation and other procedures, for example, are being used more frequently to correct arrhythmias, and in the U.S. alone more than 1.2 million people are treated with coronary angioplasty each year. Surgeons perform over 2,100 heart transplantation procedures annually in this country—and the one-year survival rate post-operation is 88 percent. As of July of this year, almost 3,000 people were on a transplantation waiting list. In patients who have poor cardiac function, implanted ventricular assist devices are used to bridge their time to the transplant operation.

These advances have helped to increase the number of people who survive a cardiac event, and who are in need of care after discharge from an acute care hospital. The field of rehabilitation medicine—with its emphasis on optimization of functionality, an interdisciplinary approach to treatment and patient education—will be integral in effectively serving this growing population in the years ahead.

A New Mindset
Indeed, in the 1950s physiatrists already were leading advocates of the importance of mobilizing the recuperating cardiac patient more quickly. Ultimately, this has proved to enhance myocardial reconditioning while shortening the overall length of hospitalization, allowing for a quicker return to regular daily activities.

Despite this innovative early approach, rehabilitation hospitals have managed cardiac patients similarly to other individuals, without specifically targeting their unique requirements. Physiatrists have been responsible for their medical care and physical and functional gains, using general rehabilitation techniques and equipment. Therapy has been modified based on the patient response, but not always focused entirely on the particular needs of a person after (continued on page 7)
As part of the Select Medical Corporation family, Kessler Institute for Rehabilitation is providing operational leadership to a growing number of rehabilitation hospitals around the country. By building on an existing way of work at Kessler, we are creating a nationwide community of these hospitals. This leadership role gives our organization an opportunity to learn whether what we do in our three New Jersey rehabilitation hospitals can extend to additional settings. We will also discover just how successfully our policies and procedures will complement those of other rehabilitation hospitals that join us in this endeavor.

Building a network provides us with a new perspective on rehabilitation. The classic difference between central leadership and field operations exists in any organization or profession, including rehabilitation. In the field, local markets and experiences drive clinical and administrative decisions in caring for patients. At the central level, drivers such as standardization, comparability, equity and scalability are important factors that are not typically the concern of local facilities. Neither perspective is right nor wrong, nor do they need to be competitive, when in fact these viewpoints are complementary, and when combined, produce the best patient care.

Providing operational leadership to a community of hospitals also presents Kessler with the opportunity to enhance the operations of each individual unit as they’re woven together into a larger whole. Our challenge is to continue to emphasize the core values that we all share, which include the principles of being patient-centered and of using the most evidence-based rationales for our clinical and administrative decisions. Kessler intends to rely upon establishing standard measurements of useful and important performance features to create consistently high operating results for patients at each of the hospitals. Having a larger network will help us make an even more positive difference for our patients and our facilities. We all believe that if we do the best things in the best ways this not only will translate to excellent patient care, but it will prove to be good business practice as well.

Kessler also views building a network of rehabilitation hospitals as an opportunity to develop a large-scale platform for both our research and our continuing education activities. We will attract additional inquisitive minds with a desire to learn, which in turn will give us a greater rationale for providing for their thirst for knowledge and skill development. The network structure also will result in a larger number of patients and sites to draw upon for our research protocols and clinical trials. This will give us even more opportunities to advance knowledge and develop the best practices in the field, and to bring them directly to our hospitals to enhance patient care.

Overall, our goal in forming this hospital network is to create a force that can achieve positive change and advancement for medical rehabilitation and the patients who need our care.

Bruce M. Gans, M.D.
Chief Medical Officer
Deep brain stimulation is helping Parkinson’s patients reduce symptoms, improve function and participate in a more aggressive course of rehabilitation

URI ADLER, M.D.

PARKINSON’S DISEASE can be relentless in reducing a person’s physical functioning and quality of life, leading to years of debilitation. But at Kessler Institute for Rehabilitation, experts are teaming with local acute care hospitals to help Parkinson’s patients restore their functional abilities and maximize their independence, thanks to an innovative surgery called deep brain stimulation (DBS).

Parkinson’s disease is characterized by tremors, limb rigidity, abnormal movements and gait difficulties. Bathing, dressing, driving and other activities of daily living frequently become markedly impaired. Dopamine agonists such as levodopa usually help to reduce motor symptoms, but side effects may occur. Long-term use of levodopa has been associated with limb jerking and twitching, and over time, the clinical efficacy of the drugs may diminish. For patients who do not respond to medications or cannot tolerate side effects, DBS is an invasive yet highly effective alternative.

A Novel Approach
The procedure involves implanting electrodes into the brain, typically in the thalamus, subthalamic nucleus or globus pallidus, which provide electrical impulses that alter the nerve signals responsible for the motor abnormalities. Much like a cardiac pacemaker, the electrodes are connected to wires that run under the skin down the neck and attach to a stimulator implanted inferiorly to the clavicle. The stimulator is programmed to deliver electrical impulses to different parts of the brain and at varying amounts, providing a near-instantaneous reduction in motor symptoms. Some DBS recipients can have their medications significantly reduced or stopped altogether, which can mean fewer side effects.

Implantation is lengthy and involves two surgeries—one for electrode and wire placement and another, one to two weeks later, for stimulator insertion. Once the stimulator and electrodes are in place, a physician adjusts the stimulator parameters for optimal symptom reduction. Since each individual is unique, stimulator adjustment is a trial-and-error process that can take several months to perfect and requires regular follow-up visits. Due to its invasiveness, the procedure is not recommended for patients who respond well to medication, or those who have not passed a rigorous preoperative neuropsychological evaluation.

Enhancing Rehabilitation
The use of DBS to alleviate motor symptoms means patients have more opportunities to improve their mobility, self-care, communication and other functioning through an aggressive rehabilitation program. To help patients receive the greatest benefit from DBS, this year Kessler joined with Hackensack University Medical Center and Valley Hospital to provide a streamlined approach to continuing care. Within days of implantation, patients are admitted to Kessler’s Saddle Brook campus, where they are monitored daily to assess factors such as mobility and balance, which help determine whether the stimulation is working effectively. Neurologists work closely with Kessler’s physicians as well as physical, occupational and speech therapists to ensure the individual is responding well. The DBS may be adjusted on a daily basis to optimize the patient’s response. This multidisciplinary approach allows changes to be made based on input from both the patient as well as the therapists.

Most participants spend one week in the inpatient program, and Kessler has seen very good results in terms of improved functional status and quality of life. During the rehabilitation hospital stay the healing from the implantation surgery and other medical issues can be addressed simultaneously, allowing for a comprehensive approach to care.

An early start to acute rehabilitation is beneficial for patients following DBS surgery.

Uri Adler, M.D., is the director of Stroke Rehabilitation Services at Kessler’s Saddle Brook campus. He is trained as a physiatrist and specializes in stroke rehabilitation, including spasticity management and musculoskeletal disorders. Adler is a member of the American Academy of Physical Medicine and Rehabilitation and the American Paraplegia Society. You can reach him at uadler@kessler-rehab.com.
GAINS FOR THE BRAIN

A new program at Kessler Institute for Rehabilitation addresses the specific needs of people with mild traumatic brain injury—a condition difficult to define and diagnose.

MONIQUE TREMAINÉ, PH.D., KAREN KEPLER, D.O., PH.D.

THE PATIENT with mild traumatic brain injury (TBI) often faces a difficult path through the medical system before obtaining the correct diagnosis and referral for treatment. Along the way, the individual may experience multiple setbacks in his or her personal and professional life before mild TBI is properly assessed. Fortunately, new evidence-based techniques are becoming available that will help to identify and better understand the deficits that occur in mild TBI, and more effective clinical treatments are being implemented.

Focus on Rehabilitation spoke about mild TBI, advanced brain imaging and treatment strategies with two experts from Kessler Institute for Rehabilitation: Karen Kepler, D.O., Ph.D., director of Neurocognitive Rehabilitation, and Monique Tremaine, Ph.D., senior neuropsychologist. Kepler and Tremaine are co-directors of Kessler’s recently established cognitive rehabilitation program for mild TBI.

Focus: What types of injuries cause mild TBI?
Karen Kepler, D.O., Ph.D.: Motor vehicle accidents are probably the most frequent cause in civilian settings, but sports concussions are also common. Mild TBI is also seen after falls, especially in the elderly population. Additionally, we now know that the condition can result from injuries that were not previously linked to brain trauma, such as a vehicle accident causing acceleration and deceleration of the head.

Focus: Describe the cognitive changes that can occur.
Tremaine: Patients with mild TBI often present six months after the accident complaining of short-term memory loss, difficulty with concentration and what many refer to as “brain fog.” They may notice they are not completing tasks or have become indecisive. They frequently complain of reduced performance at work.

Kepler: Patients find they are not doing as well at home or in relationships, or wherever they need to multitask, such as while parenting or working. They begin to get a little anxious, a little depressed. They may not attribute the changes to the accident that actually started this chain of events, so they may visit their primary care provider or a mental health specialist first. Even if a patient is diagnosed with mild TBI, the doctor may want to try an antidepressant or anti-anxiety medicine initially to treat those specific symptoms, rather than looking at the whole picture of the impact that mild TBI has had on the person’s life.

Focus: What types of testing are used to diagnose mild TBI and assess the cognitive deficits associated with it?
Tremaine: We don’t always need specialized radiologic imaging to understand...
the cause of a patient’s symptoms, including cognitive changes. For example, if there was a loss of consciousness, we can assume some degree of brain injury and then begin to look for a pattern of deficit in neuropsychological testing. Whether mild TBI is the cause of a patient’s symptoms is less clear if the patient did not lose consciousness but was just confused or dazed after an accident, or if the person presents with vague, undefined complaints such as “brain fog.” When diagnosing these cases or assessing the extent of a brain injury, we look for deficits at higher levels of brain function, such as problems with executive functioning or planning ability. We perform an extensive battery of neuropsychological screenings, including effort testing (to measure the possibility of malingering or some symptom exaggeration), personality assessment, and intellectual and cognitive evaluation.

**Focus:** What are some of the newer technologies for diagnosing mild TBI and assessing cognitive changes?

**Kepler:** Functional magnetic resonance imaging (fMRI) is a research tool that identifies efficiency of brain use. It has applicability in mild TBI, but is not yet used as a routine screening or diagnostic tool due to limited availability even in many research facilities, lack of portability and expense. The patient performs a task while undergoing an fMRI, and the fMRI identifies which areas of the brain are activated. In a healthy individual, we might see one area “light up.” In someone with mild TBI, however, the entire brain may be activated because it is not operating efficiently, and that loss of efficiency may explain the cognitive fatigue or “brain fog.”

In addition to fMRI, magnetoencephalography (MEG), which measures changes in magnetic fields generated by neuronal activity, and other advanced brain scanning tools are also useful from a research perspective, because these are ways of looking at specific changes in the brain that are not identified by more traditional techniques. Like fMRI, these tools are not yet available in portable, cost-effective forms.

Unfortunately, we don’t always see structural abnormalities on MRI or CT in mild TBI, and therefore these tools, while more frequently available, are not effective in diagnosing mild TBI or in assessing its impact on cognition.

**Focus:** How is mild TBI treated at Kessler?

**Tremaine:** We recently implemented our mild TBI program, which was designed specifically around the cognitive and psychological needs of the mild TBI population. The protocol provides help to patients in managing their symptoms, and offers strategies to deal with the losses such as impaired attention span or planning ability, and coping mechanisms to address the psychological aspects such as anxiety. The individual will also meet with a vocational therapist to help ensure successful integration into the workplace. Additional services may include physical, speech, occupational or vestibular therapy. Many may require a driving evaluation to ensure road safety.

**Kepler:** The program provides education to the patient and family about what he or she is experiencing. Individuals also learn how to prevent another injury that could cause further decline. Medications are available that can help with symptoms such as headache, fatigue and sleep cycle disruptions. We have a physical therapy component as well, and we also identify problems and intervene to get a patient additional help from the appropriate specialist—for example, a neuro-ophthalmologist or an otolaryngologist.

**Focus:** What advances in the diagnosis and treatment of patients with a mild TBI do you hope to see?

**Tremaine:** I would like to see more Web-based programs available in which the person might do computerized rehabilitation from home as part of rebuilding a daily routine and as a complement to an on-site, group-based program.

**Kepler:** As the field evolves, I would emphasize the need for heightened prevention efforts. I hope that when people sustain an injury and are either seen in their primary care provider’s office or in the ER, they will be given educational materials and information regarding follow-up or referral to a physiatrist who treats brain injury. Also, there are always new medications being utilized for headache management, improved memory and informational processing, and to combat fatigue. Lastly, it would be great if some of the functional imaging methods like fMRI and MEG could become more mainstream.

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**Karen Kepler, D.O., Ph.D.** received a doctorate in neuropsychology and initially worked in the area of brain injury and rehabilitation. She then attended medical school and completed a residency in physical medicine and rehabilitation and a fellowship in spinal cord injury. Her background is a particularly helpful combination in the care of patients with mild TBI. You can reach her at kkepler@kessler-rehab.com.

**Monique Tremaine, Ph.D.** has a doctorate in clinical neuropsychology and completed a postdoctoral fellowship in neuropsychology and acute inpatient rehabilitation. Her work in mild TBI developed in part from an interest in “floodgate phenomena,” which is the intensification of pre-existing psychiatric conditions after mild TBI. She can be reached at mtremaine@kessler-rehab.com.
Pursuing Intelligent Reform

The rehabilitation field is offering an innovative health care approach that would reform service delivery and reimbursement. Will policymakers listen?

Bruce M. Gans, M.D.

As this is written, the state of health care reform is highly fluid, literally changing by the hour. While the details of any legislation that is developed may transform, one key fact will not: The entire agenda for reform has largely focused on the issues of universal health insurance coverage, improving quality, and constraining or reducing cost.

The health policy experts, economists and lawmakers continue to define all health care reform as “large scale” and relatively unitary. The real world of health care is just the opposite—small scale, local, complicated and very messy. The industry is full of ambiguity, confusing options and decisions that have unpredictable consequences. It involves issues that are of high importance to only a few people, namely the patient and family members, while payers (both government and private insurance industry) focus on big-picture matters such as costs, not the concerns of the individual patient. By concentrating on the large issues, especially cost, the policymakers seem to be saying that dollars are more important than health outcomes in the process of reform.

Medical rehabilitation is one of the smallest “niche” components of the health care conundrum. Only 2 percent to 6 percent of Medicare expenditures are directed toward rehabilitation hospitals. Rehabilitation is potentially ill-served by the large scale and overly simplistic “fixes” being proposed. Our patients risk being placed at a disadvantage by health care reform unless it is designed specifically to anticipate the needs of selected vulnerable populations.

Peter W. Thomas, co-chair of the Consortium for Citizens with Disabilities, understood this and articulated it well when he went to the very first White House conference on health care. “The way our health care system cares for people with disabilities,” he said, “should be the litmus test for how effective the health care system is.”

A New Model

The medical rehabilitation field has proposed an innovative notion, the Continuing Care Hospital (CCH), as a model for both a service delivery reform and reimbursement reform. The CCH model, as championed by the American Medical Rehabilitation Providers Association and others, would consolidate the rehabilitation hospital, long-term acute care hospital and hospital-based skilled nursing facility. The CCH plan would either combine them literally at a single location or allow them to collaborate and operate in common as a virtual enterprise. The level of care most consistent with patient needs would be decided by a CCH rather than three separate entities competing for that care.

The CCH is a patient-centered model that puts decision-making back in the hands of the physicians. It would reform the broken payment system by linking costs of rehabilitation care to the patient, not to a building. It would also drive our small part of the health care system toward better quality and cost efficiency by creating economic incentives for these separate, competitive segments of rehabilitation to work together for optimal patient care. The field has been urging Congress to incorporate the CCH demonstration project as part of health care reform so that it could be tested; we would learn whether it works on the demonstration level and should be then provided on a larger scale.

The Giuliani Approach

Unfortunately, although the rehabilitation field has been promoting both true service delivery reform and economic reform to better serve the needs of persons with disabilities, it has been viewed by some policymakers as too small a piece of the action to merit focus. I believe the opposite is true. This should be the place we start discussing health care reform. Patients with disability or chronic illness should not be an afterthought. Hopefully, we will have the wisdom and fortitude to fix the little things as well as the big ones as this debate continues. I recall the way Rudy Giuliani chose to clean up New York City; he focused on the little things, such as building homeless shelters, ensuring garbage collection and enforcing traffic laws. The accumulation of these small, individual changes produced a huge change in the culture of the city and in its livability.

Sometimes you can fix the big challenges by focusing on the little things first.
THE HEART OF THE MATTER
(continued from page 1)

a cardiac event. Complicating matters, often there are several comorbid conditions, such as diabetes, hyperlipidemia or a history of neurovascular events.

But these prevailing practices are changing. Advances in cardiac disease management have not only contributed to survival, they have changed the mindset regarding post-acute care. In response, Kessler Institute for Rehabilitation is launching an enhanced program that will target the special characteristics of this population and utilize the capabilities available in an inpatient rehabilitation setting.

The physiatrist, with a dedicated multidisciplinary team that features a cardiologist, internist, rehabilitation nurse, physical and occupational therapists, psychologist, nutritionist, and case manager, will focus on the different cardiac requirements for rehabilitation, anticipating patient responses and developing a care plan based on realistic expectations. This new approach will follow a stepwise process that will be applied during inpatient treatment and will carry through to home.

Detailed Attention
In Kessler’s program, the appropriate therapies and modalities will be incorporated into the individual’s rehabilitation plan. For instance, during a supervised graded exercise program, heart rate and blood pressure monitoring before, during, and after activity are two of the parameters to be used to assess endurance and functional capacity progress. Heightened observation also will be enabled through routine pulse oximetry and periodic portable rhythm monitoring. These do not restrict mobility nor interfere with rehabilitation therapies but do offer better insight into the cardiovascular response to exercise. Additionally, the team psychologist may recognize subtle changes in cognitive function early, allowing for appropriate intervention.

Patients will lower their risk for recurrent cardiac events by working with team members to set appropriate goals, change habits, take medication correctly, and learn how to recognize and respond to problems quickly. Energy conservation techniques will be taught to avoid fatigue during performance of repetitive tasks. Nursing and nutrition professionals will help provide strategies and support to adapt necessary lifestyle changes.

The physiatrist will assess patients daily, and participants also will have access to a consulting cardiologist. Because of such close medical oversight, complications such as neurovascular ischemic events, infection, pleural effusion and reinfarction can be identified and addressed promptly. Also, certain clinical symptoms, such as changes in skin color, diaphoresis and edema, can be recognized and treated more quickly.

Bolstering Recovery
The goal of Kessler’s inpatient cardiac rehabilitation program is to help people feel comfortable with their abilities and limitations, while achieving a timely discharge. By then, patients should better understand their condition, have a higher exercise tolerance, and not feel weak—factors that will help to avoid a psychosomatic response that could undermine recovery.

Unfortunately, the number of individuals who can be accepted for inpatient cardiac rehabilitation may be limited by regulatory constraints. Medicare does not recognize cardiac rehabilitation as one of the 13 conditions that form one of the standards rehabilitation hospitals must meet to be reimbursed as such. As the baby boomers age, however, the increasing geriatric population will need more inpatient cardiac rehabilitation services. Data gathered from Kessler’s new protocol will be able to track recovery and demonstrate the benefits. As the methods succeed, the clinical, humanistic and economic outcomes may lead to changes in reimbursement that will allow for program expansion.

KICKING THE HABIT
Smoking cessation is one of the key lifestyle changes necessary after a cardiac event. One year after someone stops smoking, the risk of heart disease is reduced by 50 percent. After 15 years without smoking, the risk is no greater than a non-smoker’s. Educating patients about the importance of cessation is just the start of Kessler Institute for Rehabilitation’s commitment to cardiac rehabilitation.

Beginning this fall, each Kessler campus is becoming smoke-free. This change will reinforce the importance of smoking cessation and provide individuals with the resources needed to quit.

Robert Klecz, M.D., graduated from Warsaw Medical Academy in Poland, followed by an internal medical residency at the University of Medicine and Dentistry of New Jersey. He then completed a physical medicine and rehabilitation residency before joining the Kessler team, and currently serves as one of Kessler’s clinical chiefs. He can be reached at rklecz@kessler-rehab.com.
**Focus on Rehabilitation**

**ON THE ROAD AGAIN**

> From hybrid engines to adjustable pedals to brighter dashboards, green and other new auto technologies bring hope and challenge to rehabilitation patients

**RICHARD NEAD, CDRS**

Driving is often an integral part of daily life, and for many medical rehabilitation patients, getting behind the wheel again will foster both a return to independence and a positive mental outlook. But the advent of new automobile technologies, including popular “green” cars, presents unique challenges—and opportunities—for these individuals.

For example, most environmentally friendly autos currently on the market, such as the Smart car, or hybrid engine varieties, such as the Toyota Prius, are compact. Therefore, loading and unloading mobility assistive devices, including wheelchairs, is taxing and can lead to shoulder injuries from trying to maneuver large equipment into a small area. Rooftop carriers and mechanical loaders that transfer wheelchairs into the trunk function only with larger vehicles. Further, patients with hemiparesis often find getting into and out of small cars cumbersome. Although hybrid SUVs offer more storage and seating space, their increased height off the ground can lead to excessive straining when loading equipment, as well as greater difficulty in entering and exiting.

Does this mean that green vehicles have no place in driver rehabilitation? Not necessarily. The Smart car, Prius, and similar vehicles may be advantageous for individuals who are smaller in stature and do not require a wheelchair. In fact, compact cars generally provide closer pedal placement so that some patients may no longer need extensions. And nearly all hybrid engine-based cars can be adapted with hand controls for accelerating and braking.

Aside from environmental considerations, recent advances designed to help all drivers are making a difference for persons with disabilities. Some newer vehicles, including the Prius and the Honda Civic, are equipped with pedals and steering columns that have greater adjustability, reducing the need for additional modifications for people with limited range of motion. Also, modifications for older drivers have resulted in brighter illuminations on the dashboard, larger numbers and digital displays, user-friendly operator buttons on consoles, and larger mirror surfaces. These benefit those with visual deficits, motion limitations or partial paralysis, as well.

Other new technologies, however, pose a problem for rehabilitation clients. The use of electronic steering means that these steering systems can no longer be modified to reduce resistance and make the vehicle easier to turn. Many car manufacturers also are using a new wiring system known as CAN-bus wiring that creates difficulties for mobility equipment dealers in terms of relocating controls, such as horn and directional signals, for individuals with motion limitations or non-functional grasp.

It is vital that clients speak with a driver rehabilitation specialist before purchasing a car to ensure its appropriateness and adaptability. Ultimately, transportation should not be strenuous and frustrating. The vehicle should work for the driver, not the other way around.

Richard Nead, CDRS, is a certified driver rehabilitation specialist at Kessler Institute for Rehabilitation’s West Orange campus. He has been working in driver rehabilitation for 23 years and has been a member of the Association for Driver Rehabilitation Specialists—the certifying organization for driver rehabilitative services—for more than 20 years. You can reach him at rnead@kessler-rehab.com.