The wise clinician would never conflate two such disparate problems as severe stroke and traumatic injury to the brain. Indeed, we think of their effects very differently: With stroke patients we tend to think first of physical difficulties, while brain injury brings to mind cognitive and behavioral deficits. In rehabilitation, however, the needs of these two groups of patients are often more similar than is widely recognized.

It is not uncommon, for example, for stroke patients to experience agitation, confusion, short-term memory loss and difficulties with attention, concentration and executive functioning. And brain injury patients may also experience hemiparesis and ataxia. Both of these groups of patients are also likely to manifest depression and abulia.

When stroke patients have the cognitive and behavioral manifestations that are more often associated with brain injury, the two types of patients should receive similar rehabilitation care—in the same settings, with similar medications and therapies. There is considerable overlap in therapy for these two very different diagnoses, because rehabilitation addresses the specific manifestations of the disorder, regardless of the cause.

Handling behavior deficits

For both types of patients, neuropsychology is used to evaluate the individual’s behavior and level of cognition. Based on the findings of the neuropsychologist, therapists

continued on page 7
This summer, our field once again received its national report card: the ranking by *U.S. News & World Report* of the so-called “best” rehabilitation hospitals in the country.

We here at Kessler were pleased to find ourselves once more listed among the top five. It is truly gratifying to be recognized by colleagues familiar with our reputation and services.

Useful as it is, however, this “best” ranking necessarily depends in part on familiarity and name recognition. And they are only proxies for the true indices of quality. Perhaps we would be better served in the long run if we focused not only on a reputational listing, but also on the challenge of developing additional measures that define superlative care in rehabilitation—measures every facility in the industry could strive to meet.

What would those measures be? First and foremost, we would need to gauge patient care. How many successful discharges to home do we have? Do patients leave with the level of function they sought when admitted? Are they and their families satisfied with our care? Are we trying hard to care for the neediest patients with whom we might not succeed as often, or are we selecting the “sure win” cases? And how satisfied is our professional staff with the care they are able to deliver?

There are other key measures we could use to mark superior rehabilitation hospitals. For one, how well do we function as corporate citizens, responding to the needs of our local communities? How much of an impact—in terms of outreach, advocacy and education—do we have on our patients and their families? And how well do we link local activities to national and international efforts to expand resources for persons with disabilities?

Here’s another critical measure: How active is a rehabilitation facility in preparing and training professionals? Excellence should include improving the skills of those already delivering care, as well as training new providers in all the different professions engaged in rehabilitation.

And finally, how committed is each of our facilities to advancing our field’s practice and knowledge? Surely, a key component of providing excellent care is fostering research that leads to developing new therapies and best practices.

If these are reasonable attributes for our field to pursue, perhaps we should move forward to further define and implement measures so we can quantify superlative care, offering a road map for all rehabilitation facilities, not just those that are well known, to pursue excellence. Then patients across the country would have access to uniformly high-quality care, which would truly be the “best” our field has to offer.
Treating the individual with brain injury often requires helping him or her become and remain sufficiently roused to participate in rehabilitation. After sustaining a moderate to severe brain injury, a patient generally progresses through stages of wakefulness and consciousness. The degree and sustainability of the person’s arousal, attention and consciousness can also be suppressed by depression, sleep/wake cycle disruption and medications. Additionally, overlapping behavioral syndromes such as poor initiation can be confused with arousal problems.

Overcoming lethargy and increasing motivation begins with identifying medications that may be blocking central pathways mediating alertness. These include drugs that have been prescribed for agitation, seizure prophylaxis or depression, among other conditions. Common drugs to avoid include haloperidol, benzodiazepines, antihistaminergics, phenobarbital, phenytoin, carbamazepine, divalproex and metoclopramide. Some of these have been shown actually to hinder overall recovery. Most can be given in reduced amounts, replaced with a better drug or eliminated. For documented seizure disorder, for example, oxcarbazepine is effective and has few sedating side effects, and lamotrigine may be activating in some individuals.

Those with brain injury may also participate poorly in therapy because of disruption in the sleep/wake cycle. A short trial of stimulants in the daytime and sleep aids such as zolpidem for sleep initiation and trazodone for sleep maintenance, with or without melatonin, can help to readjust the cycle. Depression can also contribute significantly to the perception of under-arousal. Once a medical etiology (such as thyroid deficiency or altered brain metabolism) has been ruled out, depression should be treated pharmacologically and with psychotherapy. Antidepressants with stimulating effects, such as fluoxetine, venlafaxine (at high doses) and bupropion, are most useful. Tricyclics are used less often, but abundant literature shows that the catecholamine potentiation can “wake up” the low-level brain injured patient. For the agitated or insomniac depressed patient, trazodone or mirtazapine can be used.

If the patient requires further stimulation, patients can benefit from drugs that potentiate dopamine, which is particularly important when a component of abulia exists. This phenomenon of reduced initiation, motivation and drive often leads to a mischaracterization of the patient as “not trying” or “not a good rehabilitation candidate.” Amantadine has been shown to hasten recovery and enhance drive and arousal. Sinemet, selegline and bromocriptine also stimulate dopamine pathways and may promote recovery too.

Stimulants such as methylphenidate and dextroamphetamine may be useful for some patients. The novel wake-promoting drug modafinil is also used to combat post-traumatic fatigue and may even improve cognition. It is nonaddictive, has few side effects and can be used in conjunction with other stimulants. Modafinil is particularly useful in cardiac patients, hypertensives or those at risk of drug addiction. The newer drug atomoxetine also poses less addicting potential and has few side effects. These stimulating drug regimens are generally continued beyond discharge. Once the patient has completed the discharge transition, drug holidays and dosage changes can be used to determine need and efficacy.

Overcoming lethargy and its mimickers in the brain injured population is a complex process, but it is necessary to help patients reach their maximum potential.

Jonathan L. Fellus, M.D., is director of brain injury services at Kessler Institute for Rehabilitation. He can be reached at jfellus@kessler-rehab.com.
Treating adults with spina bifida

As the country’s most common disabling birth defect, spina bifida has drawn much needed publicity, focusing on ways mothers can prevent the defect by taking folic acid during the first months of pregnancy.

What may receive less attention, however, are the medical problems facing the 70,000 Americans now living with spina bifida. Chief among these are urological difficulties, which become more pronounced as individuals mature. To meet those challenges, Kessler Institute for Rehabilitation in West Orange, N.J., established a comprehensive Spina Bifida Urology Program under the direction of Todd A. Linsenmeyer, M.D. Focus on Rehabilitation recently spoke with Dr. Linsenmeyer.

Focus: Why are people with spina bifida prone to urological problems?

LINSENMEYER: In individuals with spina bifida, tissue that is to become parts of the brain and spinal cord does not develop normally in utero. One problem is that nerves coming out from the spinal cord are sometimes trapped in a certain position, a condition called spinal cord tethering.

As people grow older, those nerves can become stretched, which can lead to progressive weakness, numbness, or paralysis of the legs, as well as loss of bowel and bladder function. If not well treated and managed, bladder function problems can then lead to kidney damage.

More than 90 percent of people with spina bifida are born without kidney damage, but as they grow older, spinal cord tethering often prevents their urinary sphincter from relaxing the way it should. That causes pressure to build in the bladder, which in turn causes back pressure to the kidneys. This can cause the kidneys to stretch and become damaged. In rare instances, damage is so severe that patients need renal dialysis.

Focus: How do urologists monitor patients to prevent kidney damage?

LINSENMEYER: Because these problems can occur at any time, people with spina bifida need to be monitored through their entire lifetime. One of the key aspects of our urology program here at Kessler is bladder and kidney testing.

These tests include urodynamics, voiding cystourethrogram, and, if needed, cystoscopy. We generally test annually to make sure people aren’t having problems and to see whether they need to change their approach to bladder management.

Focus: What other problems can occur in adults with spina bifida?

LINSENMEYER: They often get bladder infections because their bladders do not work the way they should.

Another common problem is urinary leakage, or urinary incontinence. This occurs when a person’s urinary sphincter is too relaxed, or if overflow results when the bladder doesn’t squeeze and empty properly, or if the bladder squeezes too hard. Such problems are particularly embarrassing for teenagers and young adults. And nerve damage can also cause difficulties with erections and ejaculations.

Focus: How does the Kessler Spina Bifida Urology Program help those with urinary incontinence?

LINSENMEYER: Based on bladder test results and the person’s lifestyle, we review the methods they are using to empty their bladder. We then prescribe medications as well as supplies, such as catheters, to help them implement their bladder management plan. Our urology nurses are able to assist with bladder management changes.

Focus: When did Kessler begin this program?

LINSENMEYER: About eight years ago, a urology resident doing his pediatric urology rotation here noticed that a number of teenagers with spina bifida were no longer seeing a pediatric urologist. Some of them stopped going to an urologist altogether. That’s when we decided to start the adult Spina Bifida Urology Program. The Spina Bifida Association was also very helpful in getting our program off the ground by telling patients about it in its association newsletter.

Because we receive more than 2,000 visits every year from patients with spinal cord injuries, we have a great deal of experience in treating people with abnormal bladder function due to nerve injury.

Besides our specialized urology program, Kessler is now launching a new interdisciplinary adult medical spina bifida program that will focus on the other medical issues patients with spina bifida face. This program, headed up by Bruce Gans, M.D., Kessler’s chief medical officer, will work closely with the Spina Bifida Association of the Tri-State Region.

Readers may reach Dr. Linsenmeyer at tlinsenmeyer@kessler-rehab.com.
The goal for every amputation patient is similar: to return as much as possible to life before the amputation. How that goal is reached will differ significantly, however, depending on whether the cause of the amputation was traumatic or vascular.

Traumatic amputees are generally younger people who have lost a limb due to accident or military action. Vascular amputees are more likely to be older people who have forfeited an arm or leg to peripheral vascular disease, often associated with hypertension and diabetes.

Each type of patient has specific clinical needs and will experience a different outcome. Surgery for the vascular amputee is a non-emergency, scheduled event. As a result, the residual limb will typically be more evenly shaped and easier to fit with a prosthesis than the traumatic patient’s. On the other hand, the traumatic amputee will generally be healthier and will heal faster than will the older vascular amputee.

Meeting lifestyle needs
Common health problems that may affect the vascular amputation patient include: diabetes, hypertension, arthritis, obesity, coronary artery disease, circulatory problems in the intact limb, decreased cognition and a previous vascular bypass surgery. These conditions will affect the choice of the prosthetic components, including the suspension device, the socket and the prosthetic knee and foot. Each component is chosen based on the patient’s condition and needs. The individual with arthritis, for example, will require a prosthesis designed for relatively easy manipulation. Those with compromised cognition will need less complicated components. Vascular patients at increased risk for skin breakdown and wound site infection may require more of a cushioned interface between the residual limb and the socket. The status of the patient is also considered when choosing the optimal level of therapy. For example, the vascular amputee with a cardiac condition will be able to tolerate far less activity during physical therapy than will the younger traumatic amputation patient.

While vascular amputation patients often have other associated health problems, the traumatic amputation patient may well have other injuries, such as bone fractures or a brain injury. These could change the expected outcome for the patient. The young patient who has suffered paralysis due to the accident, for example, will have prosthetic needs far different from those of another patient.

Age and expectations
The patient’s age is also a crucial factor in choosing a prosthesis. The younger patient who has lost a limb will likely expect to return to a more active life than will the average vascular patient. Those with traumatic injury therefore tend to need stronger, more advanced prosthetic components.

Finally, helping the patient cope with the psychological trauma of losing a limb is crucial for both vascular and traumatic amputation patients, and referral to counseling and support groups should always be considered. Because many support groups consist of older, vascular amputation patients, the younger patient may derive more benefit from a mentoring approach, in which another amputation patient works directly with the person.

Meeting the individual needs of each amputation patient is a clinical challenge. However, with the availability of sophisticated prosthetic devices, the motivated patient can expect to return to the lifestyle enjoyed before the amputation.

Elinor Anan, M.D., is clinical chief of amputee services at Kessler Institute for Rehabilitation. She can be reached at eanan@kessler-rehab.com.
Making a case against medical isolationism

*Bruce M. Gans, M.D.*

I had the privilege of traveling to Oslo this summer to attend the 20th World Congress held by Rehabilitation International (RI), an organization devoted to furthering the medical rehabilitation and civil rights of persons with disabilities worldwide.

The congress, which is convened every four years, brought together representatives of more than 200 organizations from close to 90 different countries. For me, the meeting was a fascinating and profoundly sobering experience.

As physiatrists based in the United States, we often forget how lucky we are to work in a country where patients enjoy some of the world’s most comprehensive legislative and civil rights protections. While many Americans with disabilities still struggle for access to services and coverage, a glimpse of conditions for persons with disabilities in some emerging countries throws our good fortune into sharp relief.

That realization became abundantly clear to me, along with this grim reality: In many Third World and emerging countries, millions of people with disabilities are living—and often dying—in subhuman conditions. In much of the world, there is a direct and appalling correlation between disability and poverty. People with disabilities are disproportionately represented among the poorest of the poor, with barely any food to eat, let alone access to medical care or rehabilitation.

Another revelation: While we here in the United States can rely on our own system of government for laws and regulations to assist patients, many other nations depend heavily upon the leadership of the United Nations and the World Health Organization to provide standards and guidance for creating laws and resources for persons with disabling conditions.

We need to embrace the international community and take concrete steps to extend therapies, access and advocacy to less-developed parts of the world.

That sense of isolation is partly because we have grown so accustomed to the range of services we can provide our own citizens. However, it is also due to the fact that, as professionals in one of the world’s wealthiest countries, many of us have insulated ourselves from the needs of people who live beyond our borders.

Certainly, the founders of our field did not share that isolationism. Dr. Howard Rusk, for instance, trained hundreds of physicians from other parts of the world, making it possible for them to take new knowledge and skills back to their home countries. And Dr. Henry Kessler—who served as both a U.N. consultant and a U.S. delegate to many international organizations—was in fact an early RI president.

These innovators sustained a deliberate commitment to the global community and the needs of patients worldwide—one many of us have lost, even as American medicine in general has curtailed its efforts to promote social and civil rights issues in health care.

Instead, we’ve directed much of our energies toward our own professional self-interests and the economics of medicine, a focus I have myself maintained, even in these pages.

As a specialty, we have won deserved recognition for establishing vocational rehabilitation and for helping to guide our society to much broader protections for the patients we serve. While we celebrate these achievements, we also need to lose some of the parochialism of our privileged professional status. Both as individuals and as organizations, we need to embrace the international community and take concrete steps to extend therapies, access, and advocacy to less-developed parts of the world.

To do that, we should urge our professional organizations—including the American Academy of Physical Medicine and Rehabilitation and the American Congress of Rehabilitation Medicine—to play a much more active role in international rehabilitation efforts.

We also need to participate in and promote key organizations, such as the UN and WHO, that are developing standards, giving aid, and disseminating technologies and resources to people with disabilities worldwide.

To do so, let us keep the founders of our field in mind. We have realized many of their dreams when it comes to caring for our own citizens. Now let us see if we can match the international scope and breadth of their vision.

Bruce M. Gans, M.D., chief medical officer of Kessler Institute for Rehabilitation, is reachable at bgans@kessler-rehab.com.
When stroke resembles brain injury

continued from page 1

can work more effectively with the patient. If an individual is found to be easily distracted, for example, the therapist won’t choose a gym with 20 patients for that patient’s therapy. Rather, treatment will be given on a one-to-one basis in an environment with fewer patients.

The two types of patients may also experience mild to severe agitation. Both are allowed to “walk off” the energy if this can be done safely. Enclosure beds are also useful for helping agitated patients to work off energy. These tent-like structures confine patients to bed safely while still allowing them to move about. These interventions can help reduce the need for chemical and other physical restraints that can interfere with recovery and therapy.

Managing behaviors

Behavior problems also can be linked to medications and these should be carefully reviewed. For both stroke patients and those with brain injury, drugs such as haloperidol and benzodiazepines, which may have been prescribed in acute care for agitated patients, can interfere with the ability to participate in therapy and have been shown to have a negative impact on recovery. Pharmacologic treatments more acceptable for agitated stroke and brain injured patients include anti-epileptics, antidepressants, antihypertensives and, if needed, an atypical neuroleptic such as risperidol.

To continue to monitor and manage the behavior problems of patients, behavior rounds attended by the physician, neuropsychologist, nurse and therapists are conducted as necessary. These allow the care plan to be continually fine-tuned to the changing status of the patient, and help the members of the rehabilitation team provide consistent care.

For both stroke and brain injured patients who have difficulty with arousal, fatigue or concentration, a number of interventions can be effective. Regulating the sleep/wake cycle can make patients more alert and synchronize them to the day/night cycle. If needed, trazodone may be given at night to aid sleep.

Treating depression, which is common in both stroke and brain injury patients, can also improve functional recovery. For depression in both types of patients, the less sedating types of selective serotonin reuptake inhibitors (SSRIs) are generally the drugs of choice.

Medications are also useful for treating problems with cognition and lethargy. The stimulants methylphenidate and modafinil can work to improve attention, arousal and fatigue. For those with cognition deficits, acetylcholine inhibitors used to treat Alzheimer’s disease may have a positive effect on behavior as well as cognition.

Selecting interventions

Choosing the best medications is also crucial for the under-aroused patient. If antiepileptic medication is required, for instance, phenobarbital or phenytoin may be discarded in favor of less sedating drugs. Other drugs for which substitutes should be found if possible include the anti-hypertensive clonidine, the antibiotic ciprofloxacin and H2 blockers. All of these can cause confusion or decreased cognition and can be replaced by other medications—for example, proton pump inhibitors can be used instead of H2 blockers.

Besides the choice of medication, there is another critical factor to consider when prescribing for both stroke and brain injured patients. The sensitivity to side effects that results from both conditions should be viewed as similar to that of the elderly brain. Like older patients, stroke and brain injured patients are more susceptible to the side effects of medications, regardless of the individual’s age. Thus it is important that drug regimens begin with doses even lower than those recommended and that the patient be monitored closely for any adverse effects.

For both stroke and brain injured patients, a key goal of rehabilitation is to optimize the patient’s ability to undergo the rigors of therapy. This is best accomplished by treating the specific manifestations of the condition, regardless of the etiology.

Allison Averill, M.D., is director of neurorehabilitation at Kessler Institute for Rehabilitation. She can be reached at aaverill@kessler-rehab.com.
Why shouldn’t a rehabilitation facility be warm and welcoming, rather than institutional and forbidding-looking? That was the thinking behind recent improvements in the building and equipment made at the Kessler Institute for Rehabilitation facility in Chester, N.J. The goal was to create a sort of “Hawthorne effect” that would have a lasting and positive impact on patients, staff and visitors.

The original Hawthorne experiments—conducted by Harvard professor Elton Mayo from 1927 to 1932 at Western Electric Hawthorne Works in Cicero, Illinois—studied how the work environment affects productivity. Mayo found that just about any change—such as increasing or even decreasing lighting, temperature, humidity or work hours—increased productivity. Of course, the makeover of this 72-bed, 20-year-old facility is more permanent and more decorative than the changes studied by Mayo. One goal of the renovation was to make the facility brighter and more spacious, to add a sense of heightened energy and alertness to the environment. New lighting and lighter-colored walls were chosen for the halls and patient rooms to create the desired effect: a more inviting, modern look and feel.

Another goal was to increase the size of the therapy rooms to accommodate the growing number of patients and to make room for added equipment, including new tilt tables and weight-assisted treadmills. Where there were once windowless walls, two bright, cheerful solariums were now planned; one for the brain injury unit and one for the stroke unit. Planners also wanted to create a new lounge that would be a homely and comfortable area for patients and families to meet and relax, and this was added within the solarium space. A further objective was to build an exterior and main entrance that is less suggestive of an institution. The idea was to construct a façade that looked more welcoming and less oppressively clinical. This was done with the use of red brick, rich woods and a portico with columns at the entrance.

The renovations, which began in June and will continue to year’s end, have already sparked signs of a Hawthorne effect. Returning patients have commented favorably on the new look the facility has been given, noting that they like the brighter, homier design. When the changes began, staff members were quick to compliment the extra therapy space and new equipment, as well as the cosmetic improvements.

The essential message of the Hawthorne effect, also called the “somebody upstairs cares” syndrome, is clear: When you make improvements for people, it shows them you’re concerned.

The changes at Kessler’s Chester facility won’t be measured for their effects on productivity or patient outcomes. Rather, the improvements and additions were made to build an environment that reflects and supports the full spectrum of patient care provided at the facility, including the physical, psychological and emotional aspects. Redesigning the environment and adding new equipment have clearly had a positive effect on both patients and staff at this Kessler location.

Samuel Grissom, M.D., is associate medical director at Kessler Institute for Rehabilitation. Readers may e-mail him at sgrissom@kessler-rehab.com.

Both staff and returning patients have commented favorably on the facility’s new look.