

# Rehabilitation

FALL 2014

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## Spinal cord injury and the impact of cognitive deficits



BY NANCY CHIARAVALLI, PH.D.; JILL M. WECHT, ED.D.;  
GLENN WYLIE, PH.D.; AND STEVEN KIRSHBLUM, M.D.

COGNITIVE DEFICITS in the spinal cord injury (SCI) population have increased substantially the past several years, and as many as 60 percent of individuals on whom neurocognitive test data is available display impairment. Such deficits become more likely with aging. The impact on recovery and quality of life can be profound due to the additional mental demand required to learn new self-care skills, adapt to lifestyle changes, adhere to complicated medication regimens and acquire vocational abilities coincident with SCI.

Cognitive functioning is, however, often overlooked in SCI management. Furthermore, little is known about the influence of natural aging on cognitive functioning in persons with SCI. Most studies suggest that traumatic brain injury (TBI) or pre-morbid conditions may be highly contributory, but premature cardiovascular and cerebrovascular aging also may play a role.

To address the lack of data on neurocognition in SCI populations, experts at Kessler Foundation and Kessler Institute for Rehabilitation are collaborating with investigators at the James J. Peters VA Medical Center, Bronx, N.Y., on a novel study that uses neuroimaging to examine the influence of cardiovascular and cerebrovascular factors on cognition in patients with SCI.

There is little recognition in the field on the application of brain imaging in SCI or even the presence of cognitive deficits in this population. Deficits in some SCI patients have been noted anecdotally over the years but are routinely attributed to a possible concomitant TBI at the time of injury.



Despite having been relatively overlooked, neurocognitive deficits have important implications for rehabilitation and quality of life, thus underscoring the significance of this project.

### A Dual Focus

The study focuses on two key variables: white matter of the brain and blood pressure. In persons without SCI, reductions in white matter integrity have been linked to cardiovascular abnormalities; degenerative changes in small vessels associated with silent ischemic stroke and hypertension; and normal, healthy aging. But white matter integrity also can provide important clues as to whether a TBI has occurred. Individuals with TBI, for example, are at risk for working memory deficits *(continued on page 7)*

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# Adding life to years and years to life



**HOWARD RUSK**, one of the founding fathers of medical rehabilitation, once said: "Medicine has added years to life, but rehabilitation adds life to years." He called rehabilitation the third phase of medicine after diagnosis and acute treatment. Rusk's assessment, however, came early in the 20th century, when the field had little to offer patients beyond emotional and physical support. The advent of antibiotics marked a turning point, providing an evermore significant role for rehabilitative medicine as more people survived catastrophic illnesses and injuries.

Indeed, since Rusk's time many conditions previously terminal can now be managed. Life expectancy in our country has reached new highs, and even people with disabilities such as traumatic brain injury and spinal cord injury can enjoy full lives thanks to medical and societal advances.

As the role of rehabilitation medicine grew, so did the quality. A recent study commissioned by the ARA Research Institute, a subsidiary of the American Medical Rehabilitation Providers Association, whose board I chair, found that Medicare patients who received care in inpatient rehabilitation hospitals lived longer and spent more time at home than those who received such treatment in other post-acute settings.

This improved quality of life comes not just from the therapies we provide but also from the medical and nursing care received in our hospitals, a combination that improves patients' chances for recovery while enabling them to better cope with their condition.

These findings suggest that Rusk's construct should be modified: Rehabilitation not only adds life to years, but additional years to life.

The next challenge for our field is to begin rehabilitation earlier, moving it from the third phase status that is the norm to one in which physiatric assessment and rehabilitation treatment, planning and implementation are provided concurrently with the earliest stages of acute care.

Physiatrists should play a major role in these settings because we are trained to focus on the long-term health and functional potential of the patient, while those in emergency rooms and intensive care units focus on the moment-to-moment health of the individual. Their goal is to keep the person alive; our goal is to help the patient live the life he or she wants.

We understand the pathophysiology of disuse and that it takes at least twice as long to recover strength as it does to lose it through inactivity. And we know, thanks to the ARA Research Institute study, that rehabilitation programs can make a dramatic difference in returning patients to a quality life as well as extending their lives.

It is time to retire Rusk's construct of rehabilitation as the third phase of medicine and to embed it into the acute care setting so patients can realize its true promise of adding *both* years to life and life to years.

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# Getting to the heart of transforming a culture

> BY BRUCE POMERANZ, M.D.

INSTITUTING CULTURAL change in a rehabilitation hospital environment requires a strong foundation of facts, data collection and information sharing. The dissemination of empirical evidence is vital to ensuring that clinicians understand the need for improvements in quality. But there is more than meets the eye when it comes to enhancing clinical excellence through behavior change. Gaining buy-in from health care professionals relies not just on gathering and communicating about observable, concrete data, but also on the modification of beliefs and experiences that underlie individual actions.

## The Critical Component

At Kessler Institute for Rehabilitation, staff members utilize the ICARE plan, which stands for: **I**ntroduce self and role; **C**onnect and communicate what you will be doing; **A**sk/anticipate needs and address concerns; **R**espond to requests and explain time and other parameters; and **E**xit courteously, to ensure quality patient experience and interactions. The plan includes communication tools and strategies to embed ICARE into all hospital activities, as well as a survey to assess staff perceptions of ICARE and its effectiveness.

Although data collection is vital for informing quality improvement, the ICARE protocol incorporates a crucial ingredient often overlooked when efforts are concentrated mainly on generating empirical outcomes: the power and impact of human emotion. Safety and quality initiatives cannot focus solely on whether results were achieved but, should also consider what drives the behaviors that produce results. Beliefs and experiences influence actions; or, as Dale Carnegie famously wrote in 1936, the key to getting people to do something is to get them to want to do it.

## Building a Better Mousetrap

One of the most effective ways to elicit within an individual the desire to act a certain way is to use storytelling—or sharing of experiences—to communicate. Creating a narrative without trivializing the facts, as opposed to just reciting data, is more likely to appeal to a person's belief system and helps illustrate the value of adopting a given behavior in a personal and therefore more relevant way. In other words, storytelling speaks not only to one's mind but also to one's emotions.

For example, any health care provider can explain why hand washing is necessary: It helps prevent the spread of infection to keep patients safe. A recent patient at Kessler noted how impressed she was that staff regularly engaged in hand washing, but she never once mentioned that it was important to her because personnel were helping reduce infection. Rather, she stated that hand washing made her feel comfortable and well-cared for; that if her health care providers were vigilant about that, they likely were equally mindful about other areas of her care. Sharing this and similar instances with staff helps instill a different meaning to the importance of hand washing. Instead of just pertaining to bacteria and safety, it takes on an emotional value. It conveys to patients that the quality of care and relationships experienced at Kessler is of utmost importance.

Similarly, Kessler is highly focused on reducing acute care transfers (ACTs),

which in turn tends to be associated with improvements in community discharge, functional recovery, and quality of the patient experience. What motivates staff is not just the need to decrease ACTs. It is the understanding that addressing medical concerns without transferring to acute care can benefit a patient's recovery.

*As Dale Carnegie famously wrote in 1936, the key to getting people to do something is to get them to want to do it.*

## Audience Appeal

Recipients must perceive the relevance of the information being communicated. Furthermore, conveying excitement or enthusiasm about a subject helps create a sense of belief in the audience and can inspire people to behave in line with your vision. Sending emails and distributing policies is important to spread information, and the significance of data to support the need for cultural shifts cannot be dismissed. But they also cannot comprise the entire picture. What creates change that will endure is altering the foundation of people's beliefs and experiences.



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director of the Aging Brain Center and the Milton and Shirley F. Levy Family Chair and professor of Medicine, Harvard Medical School, Beth Israel Deaconess Medical Center—who has become one of our research collaborators.

- 3 Held open forums with the staff and the DITF to assess the potential burden, barriers and benefits of CAM implementation at Kessler. Sessions took place at all three campuses.
- 4 Piloted and audited CAM at Kessler's Chester campus because it initially required the training of only two nurses who perform the majority of admissions there.
- 5 Worked with staff and leadership to tailor CAM to fit with the current care process at Kessler. For example, one ongoing challenge we face is that since delirium is a decline in cognition, its recognition requires knowledge of a patient's baseline mental status. This can be an issue when no family member is available at the time of admission to describe possible changes to a patient's mental state. After reviewing the literature, we developed the process to handle this situation: If a person appears confused, the individual is to be considered positive for delirium, unless proved otherwise. We tailored these types of refinements to our situation and added them to the CAM forms at Kessler.
- 6 Formed a critical communication pathway among nursing, therapists and physicians (physiatrists and internists). When the CAM assessment is found to be positive, the patient's physician is informed immediately. We have developed a standardized delirium intervention protocol to guide identification of the underlying causes and the treatment.

*Despite having been relatively overlooked, neurocognitive deficits have important implications for rehabilitation and quality of life.*

### Initial Results

At the Chester campus, the delirium documentation at admission is 98 percent. The DITF works together with nursing staffs to improve compliance and the validity of CAM. Based on this experience, we expanded CAM screening to the other two campuses. Our preliminary data showed that approximately 20 percent of patients were CAM-positive at admission from November through December 2013. Forty-eight percent of these patients had unfavorable outcomes, such as being transferred to the acute care hospital or being discharged to a long-term care facility.

### Next Steps

Kessler's nurse liaisons have joined this initiative. At screening prior to admission to the rehabilitation hospital, the liaisons will routinely document patients' history of delirium during acute care hospitalization. We expect that this information will help the admissions team identify possible causes of delirium and enable them to form, as early as possible, intervention plans for those with or at high risk for delirium. This is an example of Kessler's commitment to practicing a continuum of care across different settings.

To guide the care of those found to be CAM-positive for delirium or patients at high risk for the condition, we have developed the Kessler Delirium Intervention Protocol (K-DIP), which is utilized by the physicians to systemically identify the potential

causes and implement multidisciplinary interventions. Currently, this step is practiced primarily at the Saddle Brook campus by on-site task force physicians Eun Byun, M.D., and Anthony Lee, M.D. Based on this pilot, we are revising the K-DIP prior to wider adoption. On a number of occasions we have identified the cause of delirium to be as simple as lack of a hearing aid or dosage of medication (e.g., metoclopramide). By addressing these issues, we have successfully resolved patients' delirium.

We also integrated delirium prevention and early detection and intervention into the educational curriculum for multiple disciplines, such as nurses and resident physicians. We presented the delirium initiative as one of the main topics on Nursing Education Day, which provides mandatory training for Kessler nurses. This year, we added the delirium initiative and K-DIP to the formal didactic curriculum of resident physicians. This integrates well with the requirement of the Accreditation Council for Graduate Medical Education for all resident physicians to be involved in quality improvement projects for Practice-Based Learning and Improvement, a core competency of graduate medical education.

Our experience shows that delirium screening can be implemented systematically throughout an inpatient rehabilitation system by using strategies developed in-house through a multidisciplinary process and with support from staff through the highest levels of leadership.



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# Federal rule making and the rehabilitation hospital: What to expect in the coming year

> BY BRUCE M. GANS, M.D.

EACH YEAR, THE CENTERS for Medicare and Medicaid Services (CMS) proposes and then finalizes regulatory changes in Medicare payments and reporting requirements. The agency, like other federal agencies, publishes its proposed rules in the Federal Register.

This year, CMS published a proposed rule for the inpatient rehabilitative facility inpatient prospective payment system (IRF-IPPS) in May and asked for written comments. The public had 45 days to respond. While any interested party is free to comment, trade organizations like the American Medical Rehabilitation Providers Association (AMRPA) have a formal process they follow in developing their positions and submitting input.

The agency is obligated to acknowledge and consider every comment and publish information on each in its final rule. For each comment received, CMS describes why it did or did not revise the final rule. It is impressive how open and transparent the process is.

At times, Kessler Institute for Rehabilitation has submitted its own comments on proposed rules. This year, however, we were involved in developing the AMRPA comments and determined that our interests were aligned with those the organization expressed, so we did not develop a separate letter. Each AMRPA member has similar opportunities to become involved in such policy issues.

The final IRF-IPPS rule was published in the Federal Register in early August. The agency held firm on some elements, modified others—clearly based on the input received, including from AMRPA—and decided to delay many components for a year to give the field time to adapt and adjust to new reporting and other regulatory requirements.

The majority of the factors addressed in the rule are concentrated in three areas: compliance, reimbursement and quality reporting.

## Compliance Changes

The agency narrowed the presumptive compliance methodology it uses to test whether facilities meet the 60 percent threshold.\* These include changes to which Impairment Group Codes and Etiologic Diagnosis Codes will be counted, although these adjustments will be delayed at least a year.

The agency also modified how it will define therapy modes, and plans to begin collecting data to further study the three-hour rule.

## Reimbursement Changes

The agency recognized the unstable times that rehabilitation hospitals face given regulatory and coding changes, and froze the facility-level adjustment factors at current levels.

Other changes to the IRF prospective payment system include the following:

- Increased the standard payment rate conversion factor to \$15,198 from the current \$14,846, thanks to a 2.9 percent market basket increase
- Slightly reduced the labor-related share for 2015
- Slightly adjusted the outlier threshold to maintain outlier payments at 3 percent
- Added an indicator to the facility-level adjustment factors to signify whether the facility was freestanding, or a part of an acute care or critical access hospital

## Quality Reporting Changes

The agency added more quality and data reporting requirements to the Inpatient Rehabilitation Facility Patient Assessment Instrument (IRF-PAI) around

the incidence of methicillin-resistant staphylococcus aureus and clostridium difficile infection. Reporting begins with admissions and discharges on or after Jan. 1, 2015, while the parameters will be considered in reimbursement starting fiscal year 2017 under the current pay-for-reporting model.

*For each comment received, CMS describes why it did or did not revise the final rule. It is impressive how open and transparent the process is.*

Another change is the establishment of new data compliance thresholds of 95 percent for IRF-PAI and 100 percent for the National Healthcare Safety Network, with a data validation policy of 75 percent accuracy. Providers who do not meet both thresholds could see their Medicare payments cut by 2 percent.

The proposal, comment and final announcement cycle in federal rule making demonstrates that while our system of government is bureaucratic and complex, it is also open and responsive. What is essential is that concerned stakeholders take advantage of the process to express their views and help influence change.

\* At least 60 percent of a rehabilitation hospital's admissions in a single cost reporting period must fall within one or more of 13 specified clinical conditions in order for the hospital to qualify for Medicare payment as a rehabilitation hospital.

## The impact of cognitive deficits on spinal cord injuries

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and early onset Alzheimer's dementia. White matter integrity is often ignored in patients with SCI but nonetheless can affect treatment decisions and longitudinal outcomes.

A second element to be analyzed is blood pressure. Ongoing hypotension in patients older than 65 years has been associated with slowed cognitive speed, poorer word recall, decreased accuracy of response, limited attention, prolonged reaction times, and reduced memory and concentration. Low blood pressure also has been connected to poor patient ratings of general health, disturbances in mental state, increased fatigue, impaired social well-being, loss of appetite and depression. These findings could have significant implications for individuals with higher cord lesions in whom persistent hypotension is common. For instance, these researchers recently documented significantly reduced memory as well as marginally reduced attention and information processing speed in hypotensive individuals with SCI compared with normotensive individuals with SCI. This suggests that cognitive deficits may be the result of chronic and episodic cerebral hypoperfusion, secondary to persistent hypotension.

### Innovative Inquiries

The objective of the study is to compare cardiovascular, cerebrovascular and cognitive function among populations with and without SCI. Sixty participants with SCI will be age-matched to 20 able-bodied controls (non-SCI individuals age 30–40 years) and an additional 20 older able-bodied controls (age 50–60 years). All participants will complete tests of cardiovascular and cerebrovascular physiology, neuropsychological functioning (such as memory and processing speed), and anatomical and functional neuroimaging. Outcomes will be compared in an effort to understand the cognitive and age-related changes in persons with SCI and inform interventional studies aimed at improving

health and longevity in the SCI population. More specifically, detection of neurocognitive and cardiovascular decrements could lead to timely and appropriate intervention, which in turn would be expected to improve mortality, morbidity and quality of life.



### Taking Another Look

This effort will be facilitated largely by use of the Rocco Ortenzio Neuroimaging Center at Kessler Foundation, which offers the only research-dedicated 3T scanner in the U.S. to be located at a free-standing rehabilitation hospital, Kessler Institute. This powerful new resource enables researchers to scan patients during inpatient rehabilitation and enhances understanding of the recovery process at a very early stage from multiple perspectives. It also represents an excellent opportunity for Kessler physicians and researchers to collaborate on novel

topics, using the latest technology.

The knowledge gained from the neuroimaging center has the potential to significantly influence clinical care across numerous realms of neural recovery. For example, the scanner may be used to identify changes in the brain that occur as a result of a particular therapeutic approach versus other treatments. Such studies routinely have been completed using outpatients, but now researchers can conduct these studies much earlier in recovery, potentially leading to more timely delivery of care.

### Unique Partnerships

The collaborative neuroimaging study represents the beginning stages of ongoing exploration through brain scanning in SCI patients. Kessler Foundation and Kessler Institute for Rehabilitation have a long history of conducting research into the overall management of SCI patients, in which multiple experts in various fields work together to improve the lives of persons with disabilities. The combination of Kessler Institute's exemplary clinical care in rehabilitation medicine and Kessler Foundation's internationally recognized research accomplishments and resources affords unique opportunities to conduct cutting-edge clinical research. This can then be applied to a clinical setting and lead to better patient outcomes.



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## Electronic medical records: A new frontier for rehabilitation

### > Q&A WITH CRISTIN MCKENNA, M.D., PH.D.

IN JUNE 2014, Kessler Institute for Rehabilitation implemented physician documentation through electronic medical record (EMR) for outpatient services. *Focus on Rehabilitation* spoke with Cristin McKenna, M.D., Ph.D., about Kessler's initial experience with transitioning to the new EMR system.

#### **Focus on Rehabilitation:**

What are the benefits of physician EMR?

#### **Cristin McKenna, M.D., Ph.D.:**

Hopefully EMR will contribute to better communications and better health care. The use of EMR eliminates the need for transcription services and improves turnaround time as notes are completed and signed-off electronically. EMR also removes errors due to handwriting that is difficult to read.

The template-driven structure and consistent format of EMR may make it easier to search and scan for relevant information.

EMR documents also may facilitate implementation of standardized recommendations and set trigger reminders to review certain critical aspects of care.

**Focus:** Are there drawbacks to physician EMR?

**McKenna:** There is a steep learning curve. Staff and physicians must devote time to learn the system and transition the old records. While computer-based records offer more immediate access to information and allow physicians to review EMRs without physical proximity to the charts, if the computer system malfunctions, the physician is at a loss.

EMR also poses the risk of propagating misinformation from erroneous entries in the chart. For example, while a patient's physical exam and history of present illness arise de novo at every visit, their family history is carried over from visit to visit. Thus, an error could be repeated throughout the entire medical record unless this information is reviewed with the patient periodically to ensure accuracy. Finally, EMR carries a risk

of compromising a patient's privacy. Special attention to preventing breaches is critical. Our responsibility to protect our patients' health care information makes us understandably cautious.

**Focus:** How were the first few weeks of EMR implementation?

**McKenna:** Physicians completed online training along with on-site classes offered by the EMR vendor prior to our going live. The vendor's staff also assisted with troubleshooting during the launch.

Using the new technology and entering our very specific patient population's characteristics is time consuming. To better capture the highly specialized physical exam and history, we are developing customized templates that will make electronic documentation of care smoother and more efficient.



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