

Rehabilitation

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Attending conferences and meetings entails the costs and aggravations of travel. So should you opt for technological alternatives such as video conferencing? Bruce M. Gans, M.D., explains why packing your bags for face-to-face interactions still has its place.

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Rehabilitation Meets the Mass Market

Universal design yields more engaging, effective tools

■ URI ADLER, M.D., AND LAUREN MCDONAGH, P.T.

Commercial technologies have advanced by incredible leaps over the past 20 years, moving from brick-size cell phones to thumb-length mobile phones, and from black-and-white Pong video games to full-color, interactive fitness programs splashed on high-definition, flat-screen televisions. At the same time, more and more products are incorporating the main tenet of universal design—making devices, environments and communications usable by as many people as possible without the need for adaptation.

Fortunately, rehabilitation professionals are taking advantage of this trend and providing innovative, interesting experiences for patients that also enhance outcomes.

Game On

A major challenge during the rehabilitation process, particularly in the outpatient and home settings, is to keep the patient engaged and motivated. Kessler Institute for Rehabilitation uses virtual reality and other mass-market technologies to involve individuals visually, physically and cognitively. Most important, patients enjoy these experiences. As a result, they are more inclined to stick with their programs, leading to steady progress toward their rehabilitation objectives.

Video game systems, including the wildly popular Nintendo Wii, were first incorporated into Kessler's stroke rehabilitation program, with the goal of improving balance. Positive results led clinicians *(continued on page 7)*



FOCUS ON

Rehabilitation

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The End of Meetings and Conventions?

I am frequently invited to participate in meetings and conferences around the world, and I have noticed that things have changed lately. We are all searching for ways to provide good education for ourselves, our staff and future practitioners, despite increasing financial and time restrictions on travel. However, with the current crisis in gas prices, escalating hassles of air and ground travel, and growing demands to perform more productively, it may be time for us to step back and question the wisdom of traveling to attend meetings and conventions. Increasingly we are asking ourselves, "Is this trip worth it?"

At least twice before, history predicted the demise of these types of professional gatherings. Some of us still remember the gas shortage of the 1970s and the drastic reduction in travel right after Sept. 11. Now, once again we are facing substantive reasons for cutting back. That is because these events not only take time away from valuable revenue-generating purposes, but they have also become more expensive. Many alternatives to live meetings seem to be available, viable and affordable, including conference calls, instant messaging, group "chat" forums, Internet telephone calls with live video conferencing and webinars.

Still, I can identify several compelling reasons to hold meetings that require travel. Effective human interactions require more than just verbal interchange; as much as 80 percent of the information exchange between people has been said to be through nonverbal forms of communication such as facial expressions, body language and pheromone production. Even video links limit the perception of body language, and video or voice conferencing just isn't the same as physical presence, especially for group interactions.

At meetings, much more goes on than just formal interactions. Social contacts and unplanned interchanges may be as valuable as the planned purposes of the meeting. And, what about just having fun sometimes? Visiting other settings can be breathtakingly refreshing in unanticipated ways.

Virtual meetings may take the place of those that are primarily intended for largely passive information transfer. But long meetings or conferences that deal with complex subject matter or those that offer extensive networking opportunities, group interactions or hands-on learning should still be held in desirable locations, even though they require travel. Combining meetings with leisure time activities may become more attractive for certain types of events, yet less attractive for others, so planners will need to be more thoughtful about their selection of venues and planned durations of events.

What is ultimately important is that the communication method be matched to both the explicit and the implicit purposes of an activity. We have to decide more deliberately whether a physical meeting is the right way to accomplish our goals, or whether we can choose another approach. If we do select a physical meeting as the best approach, we should be more attentive to convincing our colleagues of its value, purpose and usefulness. In that way, meetings will not die, they will just be reinvented.

Bruce M. Gans, M.D.
Chief Medical Officer

A Prescription for Safety and Self-Reliance

The role of medication management in rehabilitation

■ MONIKA ELLER, O.T.

In the typical medication management process of a hospital, the physician prescribes, the pharmacist fills and the nurse administers. But what happens then? Unfortunately, staff members do not always assess the patient's ability and willingness to understand medications and follow instructions for complex regimens. Adherence to medication schedules is 50 percent at best in the robust elderly. Stroke survivors, with physical, cognitive and visual challenges, may struggle even more to stay on a schedule.

To address these concerns, Kessler Institute for Rehabilitation piloted testing an innovative interactive Medication Management Group for stroke patients in the fall of 2007. Through this program, patients who are referred to the group complete the Hopkins Medication Schedule (HMS), which is a standardized and validated tool that tests the

patient's ability to understand and self-administer two medications. Patients who score well on the HMS are provided a handout of medication tips. Those who would benefit from further evaluation and education are invited to participate in a three-part training series facilitated by an interdisciplinary team that includes an occupational therapist, a nurse and a pharmacist. Participants complete a follow-up questionnaire to determine strategies for independence or the need for assistance when returning home.

Helping Patients Help Themselves

This novel program advocates independence by providing patients and their family members with the tools and knowledge necessary to increase medication adherence, decrease dangers of polypharmacy, and empower them to take charge of their health care and

medication management. Staff members also use situational education to teach patients functional problem-solving skills.

What should a patient do if he or she experiences an adverse effect? What if they run out of medication and are unable to drive to the pharmacy? Discussing situations like these can help patients execute a plan if the situation occurs after being discharged home. The group environment is supportive and collaborative, inviting meaningful conversation and sharing solutions. This functional training, along with education in medication management, meets the requirements for stroke specialty certification.

The updated Medication Management Group program at Kessler has heightened awareness regarding the level of assistance needed for medication management at discharge from acute rehabilitation. A patient's ability and need for assistance is now routinely discussed during weekly team conferences and is an integral part of discharge planning. The program was so well received that it has been expanded to all Kessler campuses.

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Medication Management Group Three-Part Training Series

Here is a glimpse at the goals established for participants in the Medication Management Group program, along with ways to help patients achieve them.

EDUCATION GOALS

1. Identify comprehension of previous medication regimens and awareness of new medications.
2. Assess the levels of assistance required pre- and post-stroke and plan strategies for safe discharge to home/community.
3. Discuss situations related to medication management after discharge and functional problem solving.

BREAKOUT ACTIVITY

- Write a list of their medications (pre- and post-hospitalization).
- Complete a pillbox activity following dosing instructions on three medication bottles.
- Question a pharmacist about prescriptions; demonstrate understanding and integration of the new medication regimen prior to discharge.

Combination Strength

A Q&A on integrating the value of research into the culture of a clinical organization

Synergy is a wonderful thing, building on the strengths of distinct elements to form a new paradigm. A prime example: Combining the knowledge and skills of practicing health professionals with traditional research methods can offer an opportunity for focused, practical investigations that will enhance the care of future patients. Kessler Institute for Rehabilitation believes strongly in the value of such “real-world” research, naming it one of its core strategic objectives for the future.

Focus on Rehabilitation spoke with Steven Kirshblum, M.D., Kessler’s medical director and director of spinal cord injury (SCI) rehabilitation, and Joan Alverzo, Ph.D., R.N., CRRN, chief clinical officer, to discuss the rationale and methods for incorporating research into clinical care settings.

Focus on Rehabilitation: Why should research values and attitudes be incorporated into clinical care settings?

Steven Kirshblum, M.D.: Research offers benefits for both patients and staff. It allows us to remain at the forefront of new techniques, treatments and modalities and to continue to serve as leaders in the field of physical medicine and rehabilitation. Findings from well-designed research efforts also form the core of evidence-based best practices and clinical care guidelines. We are proud to contribute to the knowledge base in this regard.

Joan Alverzo, Ph.D., R.N., CRRN: Having a center for clinical testing expands the therapeutic options we can offer our patients. For example, several of our clinical research protocols have included the use of a body-weight-supported treadmill to measure progress in gait training and weight-bearing capacity. Obtaining

this device initially for research led to its availability as a treatment modality for our patients.

Kirshblum: On the staff side, nothing keeps our staff motivated more than discovering new ways to help patients achieve their goals. Research also encourages creative and collaborative thinking. For example, our nursing, case management and therapy departments recently collaborated on a research project focused on the successful discharge of SCI patients to the home environment. They developed new strategies, tested them and found several that resulted in enhanced outcomes. Such collaborations inform and enhance clinical operations and future research endeavors.

Focus: What are some of the ways in which Kessler was able to achieve its goal of incorporating research values into health care processes?

Alverzo: First, because research is rarely accomplished by a single individual, we’ve encouraged collaboration whenever possible. One example is the cross-department project just mentioned, but we also routinely pair new researchers with experienced investigators. Our nursing staff has formed a research council to develop and implement evidence-based care protocols. These efforts are part of the nurses’ pursuit of Magnet status from the American Nurses Credentialing Center, which is awarded only to health care organizations that meet criteria for excellence in nursing practice and patient care.

We’ve also instituted a program to develop our clinicians into researchers. We’ve held a series of workshops on research-related topics such as study design, literature searching and data analysis. We encourage program

participants to form collaborative groups to conduct clinical research projects of interest to them. The response has been very positive.

Kirshblum: One practical strategy to enhance the incorporation of research into clinical care settings is to offer infrastructure support to our clinician-investigators. Kessler has developed a two-way relationship with the Kessler Medical Rehabilitation Research and Education Center (KMRREC), a non-profit division of the Henry H. Kessler Foundation that works to improve the lives of people with physical and cognitive disabilities through research and education. KMRREC provides support to Kessler researchers in the form of Institutional Review Board review and approval, consultations on study designs and methods, statistical analyses, and other services. In turn, Kessler investigators serve as a clinical resource for KMRREC projects, offering their expertise regarding disease states and health care processes.

Focus: What challenges do facilities face in incorporating research into patient-care processes?

Kirshblum: In clinical care settings, conducting research often is considered a separate, discrete activity that can be irrelevant or disruptive to the process of care. We have had great success in educating Kessler personnel about the benefits and advantages of incorporating research methods into patient care.

In addition, time is always a factor—there are only so many hours in the day. Research must also be built into and around regularly scheduled activities such as physical, speech or occupational therapies. We take the safety and protection of our clinical research subjects very seriously. This means devoting a great

deal of time to documentation, which includes reporting, meeting criteria for maintaining privacy, entering data and ensuring their security, and following procedures for ethics and the protection of human research subjects, among other tasks.

This investment of time and effort continues to pay off, however. In recognition of its focus on research, Kessler has been named a Model System for both SCI and traumatic brain injury (TBI) as defined by the National Institute on Disability and Rehabilitation Research. Model System programs are those that incorporate rigorous research methods into patient care, with the ultimate

goal of developing evidence-based interventions. We are proud that Kessler is one of only 14 SCI Model Systems and one of only 16 TBI Model Systems across the United States.

Focus: Any final thoughts?

Alverzo: Research is closely married to outcomes. Without accurate evaluation of outcomes, effective interventions might be discarded in error, or ineffective or even detrimental interventions might mistakenly be adopted. In our rehabilitation environment, it is gratifying that we can leverage research with outcomes measurements that also demonstrate excellence of

care. These outcomes data, in turn, can then be used to improve the care of future patients in a continuous quality improvement cycle.

Kirshblum: We believe that conducting research is part of our commitment to the populations we serve. We must continue to find new ways to enhance our patients' quality of life. They have come to expect this, and Kessler aims to exceed their expectations.

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Research Activities at Kessler



Steven Kirshblum, M.D. (center), and Jeremiah Nieves, M.D., examine the hand function of a patient with SCI.

At any given time, Kessler Institute for Rehabilitation and its affiliated centers are typically conducting an average of 25 to 30 research projects involving the use of diagnostic tests, pharmacological therapies and technological interventions. Current projects range from small pilot studies to large trials of approved treatments, and they cover a range of research areas related

to improving the quality of life for patients undergoing rehabilitation:

- Treatment of vascular dementia after stroke.
- Prevention of respiratory tract infections in patients with spinal cord injury (SCI).
- Effect of reinforcement of walking speed after stroke.

- Assessment of spatial neglect and bias in perception of near and far space.
- Treatment of spasticity in patients with SCI.
- Boosting working memory in patients with traumatic brain injury.
- Insulin resistance intervention after stroke.

- Treatment of neurogenic pain in those with SCI.

The final stage of research is communication of the findings, so that they can be tested in further investigations or incorporated into clinical care. Since 2000, Kessler researchers have published more than 170 articles in peer-reviewed medical journals alone.

Labor Lows

Tackling workforce shortages in medical rehabilitation

■ BRUCE M. GANS, M.D.

The current short supply of labor is close to plunging our field of physical medicine and rehabilitation (PM&R) into a crisis situation. In our industry, as in any other, it can be very hard to find and hire the right employees. Unfortunately, the situation is likely to get substantially worse.

Workforce studies conducted by the field in the 1990s suggested a continuing short supply of physiatrists, and their predictions appear to ring true. In most markets, we now are

shortages are highly likely—despite recent efforts by the Association of American Medical Colleges to increase medical school enrollments by 30 percent. In addition, the U.S. medical workforce historically has been heavily supplemented by international medical graduates who train here and stay to practice. The limits on immigration are now tighter and visas are more difficult to get, further limiting physician supply.

To solve labor shortages in the short term, facilities can turn to expensive

protocols, for some of our more highly trained employees, and letting the more highly skilled workers supervise lesser-trained staff.

- Evaluating the scope of practices of various disciplines and eliminating unnecessary duplication.
- Using modern learning tools to stretch existing faculty to handle larger numbers of students. For example, we can rely upon Web-based, interactive, on-demand course work and simulator-based clinical training.
- Reducing the use of clinicians in nonclinical roles whenever feasible.
- Using self-help methods for our patients along with distance-care models such as telerehabilitation.
- Substituting humans with technology where possible by using more robotics, computers and information technologies.
- Training and relying more on family members and community members to follow through on care plans for our patients.
- Increasing our use of group therapy models.

“We need to recruit more people into the rehabilitation professions and simultaneously strengthen educational programs.”

also experiencing shortages of rehabilitation nurses, physical therapists, occupational therapists, speech language therapists, orthotists and prosthetists, and most other professions essential to our field. The shortage is particularly critical for positions requiring specialized expertise, such as practitioners in pediatric PM&R, therapists to focus on seating and positioning, and all professionals working with patients with traumatic brain injury.

Diagnosing the Problem

Why are we seeing such a crunch? Several factors are responsible. The aging baby boomer population creates a two-pronged challenge of increasing need for, and simultaneous retirement of, many skilled providers. Physician

agencies or temporary help. However, this approach leads to exaggerated costs and jeopardizes continuity and quality of care. Longer-term solutions require us to think more broadly. We need to recruit more people into the rehabilitation professions and simultaneously strengthen educational programs to handle new trainees, although this will also require additional faculty and staff. Furthermore, we need to keep our current PM&R practitioners in the workforce longer by solving problems that may otherwise lead them to drop out early, and we need to help those who have already dropped out to re-enter the workforce.

Other options to extend our labor supply include:

- Substituting less highly trained people, working under carefully designed

Maximizing Performance

The point is to stretch our limited workforce resources further. In addition, we cannot let the reimbursement system corrupt these efforts. Reimbursement policies currently penalize labor-efficient models, even though we should be encouraging and incentivizing just such alternate approaches.

Conversely, doing nothing would allow us to preserve the Medicare trust fund by not having anyone available to provide services billable to Medicare—but forcing people to do without rehabilitation is not an acceptable public policy. We do not want a capacity-constrained system. Instead, we need to take positive steps now to alleviate the substantial workforce shortages we face.

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Rehabilitation Meets the Mass Market

(continued from page 1)

to also introduce game technology into treatment programs for patients with other movement challenges. With this approach, as patients are guided through motions such as hitting a golf ball, returning a volley in tennis or hitting a home run, they not only recover lost movement but also learn to recapture integrating sensory information with motor performance.



Phone It In

Mobile phones also are used during the rehabilitation process, particularly as a safety tool. Health care providers can use text messaging, for example, to remind patients of upcoming appointments or tests, and alarms programmed into phones can signal when it's time to take medications during the day.

There are other, more sophisticated applications: Phones with Global Positioning Systems are being used to locate individuals with neurological conditions who have a tendency to wander. And with add-on technologies such as a mini-electrocardiogram, mobile phones can track a patient's heart rate and rhythm.

Everyday Design

Not all mass-market products are high-tech. For many years, specialty companies have produced implements and tools that have large grips, customized handles or other adaptive features that allow people with limited finger range of motion or hand strength to cook, garden and perform other activities of daily living. In the past, because manufacturers aimed for

a highly targeted market, these devices were only available from catalogs.

Now, however, these items have become popular with all types of customers because of their simple designs and ease of use. Accordingly, major retail stores and online outlets carry a growing array of products like this, not only increasing their availability to the rehabilitation population but also removing any residual stigma that might have been associated with their use.

Occasionally, Kessler staff modifies consumer technologies for the needs of a particular patient. For example, commercially available game controllers will be further adapted to accommodate a person's weak grip strength.

Looking Forward

Emerging technologies that are likely to be applied to rehabilitation include voice recognition appliances and navigation devices, video game controllers that detect myoelec-

tric and EEG activity as control sources, and video camera-based movement detection tools that will allow control of devices by body part without requiring physical contact.

Other devices will incorporate virtual reality elements and motion-sensitive detectors for interactive games, or will

detect footsteps and center of pressure to provide semi-automated exercise programs. These systems will be able to monitor reaction time, acceleration, flexibility, agility, spatial awareness, speed, power, heart rate and balance. Internet-based versions of these devices that currently support game playing also will likely be able to transmit status and performance data remotely to therapy centers to further support telerehabilitation programs.

Science-Based Support

Current and emerging technologies will require research to validate their use and allow them to become a standard part of rehabilitation programs—and Kessler has several such projects in development. Of considerable interest will be the association of mass-market technologies and patient functioning and participation, particularly in the home setting. If these devices and systems prove to be safe and effective, patients will likely be able to find and buy increasingly affordable options.

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Tapping Innovation

The trend of using consumer technologies in rehabilitation will likely accelerate for several reasons:

- 1 As with many technologies, the cost of virtual reality programs, game consoles and other products will continue to decrease over time, making such devices increasingly accessible.
- 2 Patients and their families also are generally enthusiastic about trying new technologies, often suggesting devices they have seen advertised on television or the Internet. Fortunately, many elderly patients, who may not be as comfortable as younger patients with high-tech devices, appear interested in them.
- 3 Technologies will continue to become more sophisticated in the future, allowing even greater application to the rehabilitation process.

Reinventing Rehabilitation

Assessing, building and revising programs to provide the best possible patient care

■ BRUCE POMERANZ, M.D.



Focusing on patient needs and goals, rehabilitation specialists implement an individualized plan of care that incorporates traditional therapies. Then as new and emerging technologies appear, those may be added to the clinician's toolbox to optimize patient outcomes. However, when patients with different clinical patterns are identified or when broad technological changes take place, it is incumbent upon us to look beyond a

traditional treatment approach and to explore opportunities to revise or create wholly new programs and services.

Responding to Needs

For example, at Kessler Institute for Rehabilitation, we offer a comprehensive rehabilitation program to address the medical, physical, cognitive and behavioral challenges of individuals with traumatic brain injuries. As more patients in severe coma were referred to us, including some who were vegetative or minimally conscious, and as new interventions became available, we developed a specialized Severe Disorders of Consciousness program. The program team incorporated new approaches to medical management, pharmacological intervention, the use of innovative evidence-based therapies, and a plan for education, research and patient advocacy.

Similarly, a Kessler program development team is piloting a Complex Stroke Rehabilitation program for patients whose condition is impacted by medical complications and co-morbidities, delirium or confusion, deconditioning, age or other factors. In the past, many of these patients would have been declined and referred to nursing homes. This new program will incorporate advanced pharmacologic

management and cognitive therapies, along with an emphasis on reconditioning and other innovations.

Meeting New Challenges

Changes in treatment at the acute care hospital are influencing the entire care delivery continuum. Thanks to advances in resuscitation and surgical techniques, patients are surviving and leaving the acute hospital more quickly, and with different needs than in the past. Other post-acute care settings, such as nursing homes, are increasing their presence and capabilities for services. In response, rehabilitation hospitals need to examine their role and the services offered as a part of the greater community's health care ecology.

For clinicians, the challenge is to take a step back, examine existing programs and patient needs and think both collaboratively and creatively to ensure that the programs and services provided optimize the recovery of each patient. We have an arsenal of resources available to us: advanced research, state-of-the-art equipment, evidence-based therapies, leading-edge technologies, innovative pharmacologic interventions, and outcomes data. Most of all, we have patient and family input to rely on.

While we may change or even eliminate existing programs to better serve the dynamic needs of persons with disabling conditions, the goal remains the same: to help all our patients reach their fullest functional potential.

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