New cancer rehabilitation program connects comprehensive care and survivorship

BY MICHAEL D. STUBBLEFIELD, M.D.

ALTHOUGH CANCER CONTINUES to be a notable target for research on therapeutic development, there is a growing interest in not just curative treatments but also in survivorship. As the oncology population ages and as more successful interventions are brought to market, issues related to functioning and quality of life are becoming increasingly salient for ensuring patients receive comprehensive oncology care.

Cancer rehabilitation is a specific component of survivorship that is gaining steam in the clinic and in the literature. Ample evidence describes the negative physical, emotional and neurocognitive sequelae of the disease and its treatments. Guidance from national accrediting bodies, such as the American College of Surgeons’ Commission on Cancer, stipulates that survivorship be an integral part of any hospital’s oncology service. Despite this, the number of medical facilities in the United States offering cancer rehabilitation care continues to lag.

In recognition of this need, Kessler Institute for Rehabilitation recently launched an initiative to help drive a more integrated approach to care, giving patients and survivors a greater chance at living more fulfilling lives.

LOOKING BEYOND THE DIAGNOSIS

A recent survey of cancer survivors found that physical functioning (encompassing pain, sexual dysfunction and other symptoms) was the most commonly identified unmet health care need. Other unaddressed areas included the ability to remain independent despite physical, emotional or mental health limitations and body image concerns. These dovetail precisely with the aims of cancer rehabilitation, which include evaluating and treating the numerous neuromuscular, musculoskeletal, painful, and other debilitating side effects of the disease and its interventions.

Historically, cancer rehabilitation was considered to be most relevant for inpatients and those with significantly advanced disease. But of the 14.5 million cancer survivors in the United States, only a small percentage are critically ill. Most are functioning outside the hospital and can benefit from services to optimize their autonomy and daily living. The ultimate goal of cancer rehabilitation, then, is to help all patients—not just the newly diagnosed or severely ill—restore function and quality of life.

(continued on page 2)
Focus on Rehabilitation

TREATMENT TRADE-OFFS
Surgery, radiation, chemotherapy, hormonal treatments and biological therapies have led to greater life expectancies among cancer patients but are often invasive and aggressive. This introduces a host of new complications that can impinge on a person’s ability to work, carry out daily activities and participate fully in life. For example, breast cancer patients who undergo lumpectomy or mastectomy often develop lymphedema, rotator cuff tendinitis, adhesive capsulitis or pectoral muscle spasms. Chemotherapeutic agents have a well-documented history of inducing peripheral neuropathy. Additionally, aromatase inhibitors—hormone therapies common in breast neoplasms—can produce severe joint aches.

Symptoms are not always immediate. A patient with a head or neck tumor who experiences resection and high doses of radiation may do well after surgery; however, two, three or even 10 years later this individual may begin to develop severe complications, such as cranial nerve injuries; decreased ability to open his or her mouth, speak or swallow; loss of shoulder function; and head, neck or shoulder pain.

A VARIETY OF TOOLS
Clinicians in the Select Medical network are providing cancer rehabilitation treatments already. Many therapists possess lymphedema management certification, for instance. But there was a desire to make these services more comprehensive and cohesive, and to attract more outpatients. To that end, this spring Kessler Institute initiated a new cancer rehabilitation program, working with local oncologists and clinics to ensure more individuals receive treatment for their unmet needs.

Physical, occupational and speech therapies are being offered for various musculoskeletal and neurological challenges, including pain, fatigue, lymphedema, joint and nerve dysfunction, sexual impairments, and mobility and range of motion limitations. For instance, physical and occupational therapies can reduce lymphedema and shoulder dysfunction and restore range of motion through advanced myofascial techniques and neuromuscular re-education. Trigger point injections or botulinum injections can relieve muscle spasms and dystonia.

Multimodal pain management is an essential component of comprehensive cancer rehabilitation. Tumor-related pain from neural, bone or soft tissue compression can be eased through physical therapy modalities such as myofascial relief, postural retraining and neuromuscular facilitation. Post surgical and chemotherapy-related discomfort often responds to progressive aerobic exercise that is best guided by a clinician trained in cancer rehabilitation. Other nonpharmacological techniques include provision of orthotics, such as a walking cane, while anti-inflammatories, nerve stabilizers, and opioids can be given if pharmacological therapies are warranted. For severe pain, various types of injections (e.g., trigger, Botox, joint) are available.

EXPANDING THE VISION
Some cancer symptoms fall outside the scope of rehabilitation but still affect physical functioning, daily living and quality of life—namely, those related to mental health and psychosocial concerns. Clinicians therefore collaborate with psychologists and psychiatrists to ensure mental health referrals are provided as needed, along with ones for case managers and social workers to assist with practical issues, like insurance needs, financial support, transportation arrangements and coordination of local supportive services.

The cross-disciplinary aspect of cancer rehabilitation is essential. Typically, oncology patients have a number of care providers, including an oncologist, a surgeon and a radiation oncologist. Now add to that mix specialists from rehabilitation, such as physiatrists; occupational, speech and physical therapists; and rehabilitation nurses. General medical subspecialists, such as those from cardiology or endocrinology, also need involvement for the comorbid conditions that may arise. The number of clinicians involved in any one case can become unwieldy, making communication, treatment planning and follow-up more complex if an integrated and cooperative approach is not taken.

Cancer is a leading cause of mortality and morbidity worldwide. In many medical facilities in this country, oncology and cancer rehabilitation are largely disconnected. Well-meaning physicians cannot always recognize and attend to the late effects of oncology treatment in their patients. But at Kessler Institute and throughout the Select Medical network, we are working to remedy this by building an interconnected team of oncology and rehabilitation specialists who share an interest, knowledge base and skill set designed to help improve the management of cancer-related effects and interventions.


REREFER YOUR PATIENTS
To schedule an appointment with Kessler Institute’s cancer rehabilitation program, call 973.243.6999.

Michael D. Stubblefield, M.D.
National medical director,
Cancer Rehabilitation, Select Medical; medical director for Cancer Rehabilitation and a physiatrist, Kessler Institute for Rehabilitation, West Orange campus
mstubblefield@kessler-rehab.com

COVER STORY

(continued from page 1)
MY MOTHER OFTEN TOLD ME, “The squeaky wheel gets the grease.” Translation: If you want change, you must be heard.

Being heard is increasingly difficult in today’s world given the cacophony of voices and messages streaming from traditional sources and social media, much of it deeply divided into distinct political camps. Worse, there appears to be no hierarchy of opinion—each voice demands equal weight regardless of the speaker’s expertise. No longer, it appears, do knowledgeable and well-informed experts, journalists and politicians have a presumptive “edge” for credibility or as much influence as they once had.

Which is why we, as rehabilitation specialists, need to work harder than ever to ensure our messages about patients, facilities and medical rehabilitation are heard. That means not just compelling content but also an engaging style and varied distribution channels. If our voices are to ring true above the noise, we must believe wholeheartedly in what we are saying.

One example is the importance of ensuring that acute care hospital patients who are ready for discharge are moved to the most appropriate level of post-acute care. Discharge planners, understandably, are interested primarily in moving patients out of the hospital. In addition, they often don’t understand the distinctions among an inpatient rehabilitation hospital, a skilled nursing facility or home care. With more nursing homes admitting Medicare patients for “rehabilitation” in what The New York Times recently called “a race for Medicare dollars,” such naiveté can put patients at risk.1

Thus, rehabilitation hospital staffs need to take the time to educate discharge planners—not at the time of discharge when our message may be drowned out by the urgent need to move the patient—but on an ongoing basis. We need to provide facts and meaningful feedback, along with information about the experiences of previously referred patients. It is critical to demonstrate transparency and credibility by relating narratives that illustrate our expertise. We must take this same approach with payers, public agencies and Congress.

We have an obligation and opportunity to make our patients and our hospitals the best they can be by speaking out effectively on the issues that affect their lives.

Bruce M. Gans, M.D.
Chief Medical Officer
bgans@kessler-rehab.com

Another step forward: Exoskeletal orthoses research may expand patient mobility

A DISCUSSION WITH STEVEN KIRSHBLUM, M.D., AND KAREN J. NOLAN, PH.D.

WHILE RESEARCH ON EXOSKELETAL ORTHOTIC technology continues to flourish, its potential value in patient care becomes increasingly clear. These devices are designed to help individuals with physical disabilities augment their strength, balance and locomotion, while achieving important functional outcomes, including establishing effective gait mechanics, improving motor control and assisting with independent ambulation.

Steven Kirshblum, M.D., the medical director and the director of Spinal Cord Injury (SCI) Rehabilitation at Kessler Institute for Rehabilitation, and Karen J. Nolan, Ph.D., a research scientist with the Kessler Foundation, recently spoke with Focus on Rehabilitation to discuss how these novel devices are evolving in the clinical research arena and what the advances may foretell.

Focus on Rehabilitation: What is the origin of these important devices? For what purpose were they initially developed?

Steven Kirshblum, M.D.: Each of the exoskeletons has evolved differently. For example, the ReWalk was developed in the early 2000s by a gentleman in Israel with a cervical level spinal cord injury who wanted to build a system to help people with SCI walk. The Ekso emerged in part from its development for use by the military.

In general, there are a number of exoskeletons in development and some currently available for rehabilitation centers. Robotic exoskeletons have moved from being an abstract idea initially to a tool being tested in the clinical rehabilitation setting. In addition, clinical research is taking place at a number of sites throughout the country, including here at the Kessler Foundation and Kessler Institute for Rehabilitation.

Focus on Rehabilitation: What endpoints are currently of greatest interest to researchers?

Karen J. Nolan, Ph.D.: Our research programs aren’t comparing devices but rather are looking at how each device can address different disabilities or deficits as a result of injury, such as stroke or spinal cord injury. For example, last year we started a unique inpatient program for use during acute care rehabilitation using a robotic exoskeleton for stroke populations. Our stroke research program is different from other centers because this technology is being used early in the rehabilitation process, during inpatient stay. As patients continue with the traditional standard of care, we use the exoskeleton for additional gait training.

Focus: What endpoints are currently of greatest interest to researchers?

Nolan: Well, there are many outcomes. The first is having therapists expand their knowledge of how to apply the technology, because at this point, it is considered another tool for retraining gait and mobility during the inpatient process. So one of the primary endpoints is for clinics to use the technology as intended and select appropriate patients post-stroke. We are also collecting information on outcomes beyond therapist training and implementation and reviewing safety and efficacy data on traditional clinical measures. We also are starting to look at differences in dosing between exoskeleton and traditional therapies.

Kirshblum: Research with exoskeletons for persons with spinal cord injuries has been ongoing for a few years, expanding to stroke patients in the past year. In spinal cord injury we are evaluating some of the secondary benefits of robotic exoskeletons, including function of the bone, muscle, bowel and bladder as well as overall quality of life.

Focus: How have the uses for this technology evolved over the past decade, as research on these tools has increased significantly?

Kirshblum: We are utilizing this technology in multiple diagnostic groups to enhance rehabilitation, but we also want to see whether an impact can be made on reducing secondary medical complications and improving patients’ quality of life. There have been studies on spinal cord injuries in the acute, subacute and chronically injured populations, and this includes improving walking capabilities as well as other clinical parameters. In stroke, this is a newer indication and population under investigation. Spinal cord injuries tend to be symmetrical, so both legs are affected at the same time equally.
Exoskeletons, including the ReWalk™ (pictured), have been used concurrently with traditional rehabilitation treatments to assist with restoring functional gait and treating individuals with stroke. This technology may provide greater intensity of training and more quantitative feedback for clinicians, potentially leading to increased functional improvements. Current research at Kessler Institute and Kessler Foundation is investigating robotic gait-training devices to evaluate the safety, feasibility and efficacy of these devices in rehabilitation populations in the inpatient and outpatient setting.

**Nolan:** Also, as the robotic orthoses evolve, so does the software. And as these both advance, the technology can be applied to additional populations. For example, as the software is refined to adjust for greater variability, we can apply the technology to different levels of strength, weakness and paralysis in the stroke population. One limb might be powered more than another, or two limbs might be powered the same, or you may need to remove or vary the amount of assistance for the limbs. We are interested in evaluating changes in asymmetry in patients’ lower limbs and in using the exoskeletons to assist with their mobility. We have applied this technology to inpatients with stroke, unilateral hemiplegia and traumatic brain injury.

**Focus:** How do you envision exoskeletal orthoses being used in the future? What improvements are needed before they are ready for “prime time” in the clinics?

**Kirshblum:** For spinal cord injuries, our goal is to continue to test these exoskeletons to make them useful from a functional standpoint or to enhance rehabilitation. While we may love technology, we love technology that leads to positive outcomes even more. And we believe that the exoskeleton technology has the potential to be a tool for rehabilitation as well as for mobility. Toward the future, I would look for a less cumbersome, less expensive and more cosmetic device—potentially being able to be placed under garments rather than over garments, being easier to don and doff, while remaining as safe as possible.

**Nolan:** In stroke, a lot of those same advances definitely apply. We are looking for these devices to have less weight and to be more streamlined. We hope to continue seeing improvement in the mechanics of the device and expanded application for a wider range of populations and impairments. We also look for enhancements in the software, as mentioned, so that the technology is easy to use in a clinical environment and can be adapted to individual patients.

**Kirshblum:** The goal for these devices would be to implement them for individual diagnostic groups and all patients with disabilities who have the potential to be up and walking, so that this could become another tool within our rehabilitation toolbox to benefit the patients we serve.

**Focus:** How much of a concern is patient acceptance of these tools and their ease of integration into clinics?

**Nolan:** With any new technology, you’re going to have patients, clinicians and researchers who need to warm up to it, but others will be enthusiastic about the opportunities it provides in terms of the rehabilitative progress. Because we have access to technology in the laboratory setting, such as technology for measuring muscle activation, we can look at this not only clinically but also from a real physics and mechanical perspective to see how the technology interacts with the human body—the biomechanics of it. This, in addition to patients’ opinions of the technology and clinical outcomes, can help form a picture of how exoskeletons can be integrated into care.

**Kirshblum:** And that’s our mission here. Our collaboration between the Kessler Foundation and Kessler Institute is to integrate state-of-the-art research capabilities into new equipment that will enhance treatment. We are on a promising path toward utilizing this new technology and improving all aspects of care.
INPATIENT REHABILITATION hospitals/units (IRH/Us) are in jeopardy today because policymakers do not distinguish between IRH/Us and skilled nursing facilities (SNFs) that offer rehabilitation services. Some in government suggest that the care must be the same, and therefore the payment should be similar, or “site neutral.” At the same time, reimbursement experiments in bundled payments put patients at risk of losing access to IRH/Us because the higher initial cost of our hospitals will outweigh the recognized increased clinical and functional value we provide.

It is difficult to highlight the clinical superiority of IRH/U care, however, because our audience often assumes our concern is related only to reimbursement and admission volumes. This assumption puts our credibility in question.

Of course reimbursement is important. It drives our ability to provide quality services. And we design our programs and hospitals to handle certain volumes of patients and so risk inefficiencies if we don’t achieve those levels. But it is not just money at stake here—it is patients’ lives and welfare.

We know from a number of published studies, including a seminal study conducted last year by Dobson I DaVanzo Health Care Consulting, that similar patients treated in an IRH/U have significantly better long-term clinical outcomes than those treated in SNFs. They spend half as much time in their initial rehabilitation setting and live an average two months longer in the community.1

This chart illustrates the difference between mortality rates for a number of health conditions in patients in inpatient rehabilitation hospitals/units (IRH/Us) versus patients in skilled nursing facilities (SNFs). Overall, IRH/U patients experienced an average 8 percent lower mortality rate during the study period than SNF patients.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Difference in mortality rate across two-year study period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amputation</td>
<td>12%</td>
</tr>
<tr>
<td>Brain Injury</td>
<td>16%</td>
</tr>
<tr>
<td>Cardiac Disorders</td>
<td>11%</td>
</tr>
<tr>
<td>Hip Fractures</td>
<td>8%</td>
</tr>
<tr>
<td>Hip/Knee Replacement</td>
<td>9%</td>
</tr>
<tr>
<td>Major Medical Complexity</td>
<td>1%</td>
</tr>
<tr>
<td>Major Multiple Trauma</td>
<td>5%</td>
</tr>
<tr>
<td>Neurological Disorders</td>
<td>7%</td>
</tr>
<tr>
<td>Other Orthopedic</td>
<td>4%</td>
</tr>
<tr>
<td>Pain Syndromes</td>
<td>7%</td>
</tr>
<tr>
<td>Pulmonary Disorders</td>
<td>10%</td>
</tr>
<tr>
<td>Spinal Cord Injury</td>
<td>7%</td>
</tr>
<tr>
<td>Stroke</td>
<td>14%</td>
</tr>
<tr>
<td>Overall Average</td>
<td>8%</td>
</tr>
</tbody>
</table>

Source: Dobson I DaVanzo analysis of research identifiable 20 percent sample of Medicare beneficiaries (and 100 percent sample of IRF beneficiaries). 2005–2009 *All differences are statistically significant at p<0.001.

Advocating for best practices, not best reimbursement

BY BRUCE M. GANS, M.D.

I believe, however, that most clinicians do not treat patients unnecessarily because it is to the health care provider’s economic advantage. As part of a privileged profession, physicians have a duty to behave responsibly in regard to our selfless dedication to the greater good for patients and society. No good can come from providers or facilities stretching beyond the bounds of clinical appropriateness because of economic self-interests.

This duty to behave responsibly includes ensuring that patients do not overutilize medical resources they may think they need. This is why we must be strong when confronted with demanding patients who want—and expect—all services, whether necessary or not. So the patient who walks into a practitioner’s office and says “I need an MRI” instead of “I need help with my back pain” must be gently but firmly guided to understand that an MRI is only indicated under specific circumstances.

In medical rehabilitation, patients or their families may demand admittance to an IRH/U when, in reality, they could and should be cared for in a less costly and more appropriate setting. Yes, that means turning away potential revenue; but it also means focusing on the principle, not the money. That is what IRH/U medical directors do every day.

Unfortunately, not everyone has the time or patience to explain to patients and their families why an IRH/U is not the right setting for an individual, or why an MRI is not recommended when evaluating a boil (something I once had a patient request). It is just easier to say “yes” and move on to the next patient.

Yet saying “no” for the right reasons is an important skill good physicians embrace. The more responsibly we behave and the more economic and clinical restraint we demonstrate, the more our message will resonate with patients and politicians.

Defying gravity: Devices that help overcome mobility limitations

THE APPLICATION of rehabilitation technology has grown over the past several decades as outcomes for patients with mobility restrictions have similarly improved and expanded. The advent of bodyweight-supported devices has been particularly beneficial in helping individuals with impaired mobility regain greater independence both safely and effectively.

THE FIRST STEP
Bodyweight-supported devices vary in function and complexity but share the goal of assisting people who cannot move within space under their own power, either because of dysfunctions in the muscles or bones or because of issues with the nervous system’s ability to control muscles or bones. The most basic of these are mechanical lifts that use a sling and harness system to transport patients between two nearby points, such as in and out of bed. Hydraulic lifts make transfers less physically demanding, decreasing the risk of caretaker injury. More complicated lifts, powered by an electric motor and run on ceiling tracks, further reduce stress on caretakers and in some cases enable patients to operate the controls independently. Though relatively simple and comparatively low-tech, these devices let patients transfer more easily, which can facilitate discharge to home when care needs might otherwise require a prolonged stay in an institutional setting. Unfortunately, these cumbersome machines impose certain architectural limitations so that home installation is not always possible. Further, while they assist with the ability to move, they do not address ambulation.

WALKING SOONER
Beyond facilitating transfers, there are similar devices used during therapy to help people relearn to walk. Like lifts, bodyweight-supported treadmill systems utilize a harness and pulley system to partially or completely support patients while they undergo gait training on a treadmill. Because they do not have to fully accommodate their own weight, individuals with difficulties in strength or balance (who otherwise would have to delay initiating therapy until their functioning improved) can instead undergo gait training earlier. Getting patients walking sooner may promote neuroplasticity and improve functional outcomes.

One of the limitations of this technology, though, is its clinical intensiveness. Typically, two therapists are needed to guide the motion of each of a patient’s legs, and a third is needed to manage the upper body and harness. Thus, the time and training required by clinicians can be extensive.

To address this issue, systems have been developed that combine bodyweight-support with robotic control of the legs. The use of computerized braces strapped to the legs teaches patients to develop a very high-quality step pattern and more ideal gait, mimicking the proper motion and symmetrical alignment of the ankles, knees and hips. This can allow a single therapist to address many of the complex aspects of walking at the same time.

A NEW JOURNEY
While the benefits of bodyweight-supported treadmills for improving ambulation are notable, the latest, most innovative devices—robotic exoskeletons—go further by giving patients more freedom to move about in natural environments rather than solely on a treadmill. Similar to the robotic bodyweight-supported treadmill systems, many gait variables are controlled simultaneously to produce a high-quality gait pattern. In addition, exoskeleton devices can increase the quantity of steps taken in a therapy session, which is vital because repetition is key to encouraging neuroplasticity. Thus, the increased “dosage” of walking typically leads to better quality performance and outcomes.

Exoskeletons are considered leading-edge technology used primarily for investigational purposes at very specialized hospitals. They also tend to work best on flat surfaces, so gait training for stairs, for example, is not yet supported. See pp. 4–5 for an in-depth discussion of this innovative technology and its implications for patients.

Bodyweight-supported devices are helping patients lead more meaningful lives, and as technologically sophisticated machines continue to improve, they are increasingly likely to become available out in the community. Although the rehabilitation field has a long way to go toward bringing that vision to reality, the evolution of these devices suggests hopeful promise for helping individuals who otherwise would not be able to walk.

Stephen Hampton, M.D.
Academic chief resident,
Department of Physical Medicine and Rehabilitation, Kessler Institute for Rehabilitation and Rutgers New Jersey Medical School
(stephen.e.hampton@gmail.com)
QUALITY AND SAFETY HAVE BEEN TOPICS of substantial interest in the ongoing public dialogue about health care. Processes, outcomes and the patient experience have all gained prominence, propelled to some extent by attention to quality stemming from the Affordable Care Act and other sources. However, a focus on quality and safety is much more than a response to such factors; it should be the foundation underlying all inpatient rehabilitation hospitals.

To that end, the third annual National Summit on Safety and Quality for Rehabilitation Hospitals, sponsored by Kessler Institute for Rehabilitation and in collaboration with the Inpatient Rehabilitation Hospital Division of Select Medical, gathered national thought leaders and experts in rehabilitation, health care and public policy to expand the conversation about how to deliver the safest, most effective and empirically driven care possible.

USABLE KNOWLEDGE
The conference, which took place April 20–22, included presentations on how to practically enhance the quality, safety and meaningfulness of patient care. Beyond giving lessons, speakers shared insights and generated discussions about tools and strategies to facilitate attendees’ implementation of knowledge gleaned during the meeting. The sessions represented an exceptional opportunity to listen, learn and share while exposing audiences to new avenues of thought as well as data outcomes, measures and technologies—all intended to help inpatient rehabilitation hospitals provide safer and more patient-centered services.

The roster of speakers spanned experts from Select Medical, the Rehabilitation Institute of Chicago, Northwestern University, the University of Pennsylvania and the Brookings Institution. The event also featured insights from specialists who lend an important voice to the health care discussion, although not involved in direct patient care. This encompassed representatives from Aetna Health insurance; the nonprofit accreditation group CARF International; The Joint Commission; and U.S. News & World Report, among others.

Messages varied in their specific viewpoint but focused ultimately on a central theme: how to optimize care delivery and the patient experience. Topics included the science of safety and quality, such as wearable devices to track, monitor and measure health outcomes; existing policies and resources to support quality service; and challenges in developing quality metrics. Health care consumer trends were widely discussed, including patients’ use of online tools and references and the continuing need for hospitals to emphasize transparency about safety data. The significance of patient-centered care also was echoed repeatedly, reflecting trends in national health care that have been moving away from disease-centered models to ones focused on function, quality of life and the overall consumer experience.

SHAPING THE FUTURE
Rehabilitation clinicians care for patients across the spectrum of wellness, from acute inpatient care to outpatient rehabilitation to long-term management. This provides numerous opportunities to promote patient-centered approaches and improve an individual’s satisfaction while consistently maintaining a focus on quality and safety. As reinforced throughout the conference, commitment and responsiveness are key to enriching the experience of patients and optimizing their welfare as well as health outcomes. This gathering demonstrated the strong interest and willingness of those involved in rehabilitation medicine and health care as a whole to move beyond discussions to making those goals a reality.

BY BRUCE POMERANZ, M.D.