

# Rehab Continuum Report™

*The essential monthly management advisor for rehabilitation professionals*

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## Chicago rehab facility formalizes treatment of oncology patients

*New program provides rehab and extra services*

**M**any rehab providers have at least some oncology patients, including brain injury and spinal cord injury patients whose disabilities stem from tumors. Actively recruiting referrals from oncologists for these and other cancer patients, however, may take a shift in rehab philosophy.

Schwab Rehabilitation Hospital & Care Network in Chicago made such a shift this year. The hospital developed a more formal program to treat cancer patients. Schwab has 125 beds, including 30 subacute beds, and is affiliated with Sinai Health System in Chicago.

“I think the best way to think about oncology rehab is that it’s rehab with a different ideology of impairment,” says **David Weiss, MD**, director of outpatient care and attending physician at Schwab. He’s also an assistant professor at the University of Chicago. “Instead of a stroke giving us the weakness, it’s a brain tumor,” he says. “Instead of a traumatic spinal cord injury, it’s a metastatic spinal cord lesion leading to paraparesis.”

### *Improves quality of life*

The new oncology rehab program is available for all cancer patients, even those who are in the terminal stage of the disease and are ready for hospice care; those patients benefit from brief rehabilitation that helps them improve their quality of life during the end stage, Weiss says.

The inpatient program consists of a team made up of physical therapists and other therapists, psychologists, social workers, pastoral care, oncologists, dietitians, rehab nurses, and a psychiatrist. Outpatient therapy is an equally important component, and a major part of the outpatient program involves lymphedema management, Weiss says.

Lymphedema experts work with cancer patients and other patients experiencing a backup of fluids in their limbs. Physical and occupational therapists undergo special two-week certification training programs to learn lymphedema management.

“We want to look at patients who have had some kind of oncology surgery that results in lymphedema as a complication,” explains **Claudette Richards**, PT, director of physical therapy. “These include breast cancer and mastectomy, prostate surgery after prostate cancer, surgery after urethra cancer, or possibly cervical cancer, or any kind of cancer where they remove lymph nodes.”

The lymphedema program involves having therapists provide soft-tissue mobilization, which is called decongestive therapy. “This is where they go in and do the soft-tissue manipulation to decongest the lymphatic system to improve drainage,” Richards says.

“Each therapy session is at least an hour, and the treatment is daily in order for it to be effective,” Richards adds. “This could last for four to six weeks, with a goal of getting the swelling decreased to close to or near normal so that a patient can perform functional activities without any problems.”

Although the cancer rehab program is new, the hospital has begun to receive referrals strictly for the lymphedema management portion. Some patients are not cancer patients but can benefit from this type of therapy, including stroke patients with upper or lower extremity swelling. Chronic venous insufficiency patients and congestive heart failure (CHF) patients also may benefit, although CHF patient referrals need to be made cautiously.

The cancer rehab program’s general goals, including the lymphedema program, include the following:

- expanding a continuum of services for oncology patients within the health care system;
- providing comprehensive interdisciplinary services to improve patients’ overall quality of life;
- expanding the hospital’s referral base to serve patients who are not currently served;
- providing an opportunity for revenue enhancement;
- establishing a specialized interdisciplinary

team to manage the cancer patient population.

Weiss acknowledges that cancer rehab still is a new concept both to oncologists and insurance companies. However, there have been changes in how people view cancer in recent years, particularly as the number of survivors grows.

“It used to be that cancer meant death, so you didn’t rehab these patients,” Weiss says. “Now it’s a disease stage, a disease process, and the question becomes whether there is a need for rehab and does this patient population benefit from rehab?”

### **Studies show need for rehab**

Several studies show there is a definite need for cancer rehabilitation, Weiss adds. “Because if you look at survivors, there’s a significant percent who have problems with ambulation and activities of daily living, and pain, and weight loss, and difficulties with working.”

Rehab therapists can help cancer patients improve in all of those areas. Plus, there’s evidence that rehab treatment can help cancer patients and their families improve their quality of life, even when the patient is dying, Weiss says.

“Families are very anxious at the end, and if you can calm them down by empowering them and giving them knowledge on how to take care of their loved one, they’re less likely to want them to be readmitted into an acute care institution,” he explains.

While the program is too new to judge reimbursement success, hospital officials anticipate little difficulty with reimbursement, which mainly will come from Medicare and Medicaid.

“They cover our routine services, but as far as getting into specifics, it depends on the individual patient and what the patient’s needs are,” says **Nancy Cutler**, MS, CRRN, vice president of inpatient services at Schwab. Medicare will cover costs associated with rehab staff because many cancer patients experience functional limitations as a result of their disease. “Then we have patients who have had less of functional gains,

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but we've done a lot of teaching with the family so they can return home," she adds.

Schwab also has been building a relationship with hospice providers so referrals can work in both directions. The hospice might refer patients to the rehab facility, and the rehab facility might refer cancer patients to hospice. "We're looking for hospice to provide us with education, and we're also looking for them to complete our continuum of care," Cutler says. "In rehab, traditionally, we have the idea of making patients better functionally and cognitively, but death and dying is not an area that rehab folks do well because it's not part of our philosophy."

Hospice professionals could help educate the oncology rehab team about death and dying issues, she says.

### ***Designed for three cancer stages***

Likewise, Schwab will work with oncologists to improve their cancer rehab program and to encourage them to make referrals to the program. Weiss has met with oncologists at lecture meetings to present the program's benefits and services.

Basically, the program is designed to offer services to patients with three different stages of cancer. **(See story on three stages of cancer and rehab, at right.)**

Those services include education, psychology and psychiatry, nutrition, pain management related to function, rehab services and therapies, lymphedema management, case management and discharge planning, female oncological management, chemotherapy, and oncology management. ■

### **Need More Information?**

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## **The three stages of cancer**

Cancer rehab services need to be adjusted according to each patient's stage of cancer, and that division of stages also is helpful in marketing the program to referral sources and payers.

**David Weiss**, MD, director of outpatient care and attending physician at Schwab Rehabilitation Hospital & Care Network in Chicago, describes the three cancer stages this way:

- **First:** Patients in the first stage are in remission, and the rehab goal is to help them achieve maximum function. For example, a patient may have gone through chemotherapy and have peripheral neuropathy as a result of treatment. The patient needs to learn strengthening skills and how to use assistive devices for activities of daily living. An average length of stay (LOS), depending on what the patient's impairment is, could be two to three weeks. A patient who has had a brain tumor, resulting in a disability that's similar to a stroke, may need 21 days, for instance.

- **Second:** Cancer patients in the second stage need supportive therapy as their cancer progresses. The goals are to help patients use adaptive equipment and do therapeutic exercises to prevent their impairment from becoming a disability. Patients may include those who have a metastatic lesion to the spinal cord and are paraparetic. Rehab care of such patients will take longer because the goal is for them to be independent at the wheelchair level. They'll need help with strengthening their upper extremities, learning how to transfer, and learning how to take care of their bowels and bladder. "Basically, they have a new body, and they need to learn how to deal with it," Weiss says. So the average LOS might be in the four-week range.

- **Third:** These patients are in the palliative, terminal stage of cancer. The goals are to help them improve or maintain comfort and function. The rehab care enables the family and patient to work together toward a goal of enhancing quality of life. For example, a rehab therapist may teach the family how to safely transfer a patient from the bed to a wheelchair. "It's very empowering to the family to help the person at the end of life to get out and enjoy the sun, so they're not just sitting in the bedroom, looking at each other," Weiss says. While this type of rehab therapy and education can be done by a home health agency, it may be done faster in a brief rehab stay before the person is referred to hospice care, he adds. The average LOS might be three days to a week. ■

# Hand technology could bring rehabs new business

*Patients need pre-surgery and post-surgery rehab*

Quadriplegic patients who can do no more than bend their elbows now have a technological option that could enable them to type, eat, or even operate a power tool. Rehab facilities, working with surgeons who implant the new system, provide the training and education patients need to operate the device.

The NeuroControl Freehand System, manufactured by NeuroControl Co. in Cleveland and approved in 1997 by the Food and Drug Administration, gives new hope to C-5 and C-6 quadriplegics, who could not be helped by tendon transfers or other hand reconstruction procedures.

“The Freehand allows us to work with patients who have higher levels of injury,” says **John C. Shaw**, MD, medical director of Southern Indiana Rehab Hospital in New Albany, IN. “Patients must be able to bend their elbow and control their shoulder to benefit.”

Shaw also is a surgeon at Clark Memorial Hospital of Jefferson, IN, which, along with the 60-bed Southern Indiana Rehab Hospital, is a member of the Jewish Hospital Health Network based in Louisville, KY. Shaw has been performing hand surgery on quadriplegic patients for nearly 20 years and is among the first physicians to implant the Freehand System.

The system involves implanting a pacemaker-like stimulator in the patient’s chest. The device is connected to electrodes by tiny wires under the skin. The patient is taught to move an external sensor that translates small movements of the shoulder into control signals, which are converted to radio waves that activate the Freehand System.

“By using a control mechanism, the patient can activate the computer hand, which allows them to open and close the hand, power the wrist, and bring the thumb into position for a palmer pinch, where the thumb comes into contact with two fingers, and another position called the key grip,” Shaw explains.

One of the most attractive features of the system is that the benefit is not limited by length of time since injury. However, patients may have to undergo rehabilitation to make the joints supple before the implant, Shaw says. “We must stimulate the selected muscles to allow them to

develop strength because once the implant is done, these people may use the device eight to 10 hours a day.”

Southern Indiana’s program for implanting the device now requires patients to be at least one year post-surgery, so the patient is stable and mentally prepared to use the system, says **Linda Moore**, OT, director of inpatient therapy services.

“Patients have to want independence and be willing to do a lot of hard work,” Moore says.

While the device offers patients hope, not all quadriplegic patients who are physically capable of using the device are emotionally ready. That’s another reason the preparation needs to be conducted in a rehab setting, Shaw says.

“We’ve recently had two surgical candidates commit suicide, including one patient who was waiting for the Freehand,” Shaw says. “It’s very important that these people are evaluated psychologically and have good family support, and that’s the major reason to wait a year post-injury.”

## ***Support from families needed***

Family support is very important for success in using the system. The patient’s motivation to stick to a therapy regimen in preparation and afterward needs to be evaluated before a physician recommends the operation. “There is some risk for a surgeon to evaluate the patient physically and say, ‘We can do an operation,’ when the surgeon’s not involved with that patient,” Shaw says.

Shaw and the rehab facility learned that partly from their experience early on with the system. The first patient was an ideal candidate physically: He was only 17, and it was less than a year after his injury, so his muscles were still strong.

But what Shaw and the other providers evaluating the teen-ager had failed to take into consideration was the boy’s dependency on his parents. “They do everything for him, and he’d rather let them wait on him than use the device,” Shaw says.

Eventually, as the boy matures and becomes more independent, he may begin to work at using the Freehand device, but his motivation thus far has been poor, he adds.

By contrast, another Freehand patient was a man in his 30s who had become a quadriplegic after a diving accident more than 10 years earlier. This patient knew what it was like to live without the ability to do many small tasks for himself,

*(Continued on page 85)*

# REHABILITATION

# OUTCOMES REVIEW™

## Stay ahead of trends in work injuries and prevention

### *Occupational injury expert offers advice*

[Editor's note: *Rehab Continuum Report* asked occupational injury expert **Terrence Sullivan**, PhD, to participate in a question-and-answer session to discuss the latest trends in work injuries and the effectiveness of rehabilitation programs aimed at preventing workplace injuries. Sullivan is president of the Institute for Work and Health in Toronto, Ontario. The organization conducts population-based studies investigating the effective treatment of musculoskeletal injury in the workplace. Sullivan also has written books about workers' compensation and health reform, including *Injury and the New World of Work*, published in 2000 by the University of British Columbia Press in Vancouver, Canada. His comments are quoted in this issue of *Rehabilitation Outcomes Review*.]

**RCR:** How have the causes of workplace injuries and prevention efforts changed in the past decade?

**Sullivan:** There are a number of ways they've changed. First of all, the patterns of injury continue to show decline in acute injuries, that is, unambiguous injuries involving crush puncture, broken bones, etc. The pattern is toward soft-tissue injuries, or mostly slow-onset injuries involving strains and sprains of the muscles, bones, and joints, and in particular, those involving lower back pain and those involving injuries of the upper extremities: arms, hands, shoulders, wrists, neck.

So those injuries have continued to grow as the proportion of all injuries and the more acute forms of injury have continued to decline. The nature of the injury has changed, and this

appears to be associated with changes in the demands of work and the composition of the work force and the kinds of work that we're doing.

The challenges for prevention of these are not typically unequivocal, monocausal, event-related injuries. These are typically problems that are multicausal and have slower onset. Work is a contributing factor and, in some cases, a clearly dominant factor; in other cases, work may be involved instead of threshold events for genesis of the disability claim.

### ***Prevention doesn't come easy***

Prevention of these injuries is not a simple matter. If you were to look at recent workplace studies that suggest where there are opportunities for reducing such injuries, we'd find three promising bundles of work. I say promising because even though they're promising, we don't have good intervention studies showing that these pay off good dividends.

The first promising area is management and organizational practice. Companies that have strong management commitment to health and safety, an employee-friendly work environment, the delegation of decision making related to health and safety practices, and strong management commitment to health and safety issues have lower injury rates, and return-to-work rates also are better following injury. So there's a promising line of activity that really involves improving the organizational management practices of the firm.

The second promising area involves ergonomic solutions to adverse exposures in the workplace that either involve unusual postures for lifting or

turning, in the case of back injury, or better managing the condition of the workstation for people who are doing white collar work, ensuring you have ergonomically optimal workstation arrangements. The pace of work, in the case of keyboarding, for example, or another repetitive task of the upper limbs, is measured in a way that respects ergonomic guidelines.

For example, there are a number of things one can do to introduce a brief rest period for competitive work for the upper extremities or to measure out in the case of keystroking the work over a period of time. So, highly compressed deadlines, which we know from our research in the newspaper industry are associated with repetitive strain injuries, are distributed over longer periods of time rather than simply being compressed into short periods of time.

### *Using common sense*

Rather than trying to push everything to produce a lot of paper really fast and requiring people to be on keyboard for hours at the end of the week to meet a deadline, you try to distribute the work more evenly over the course of the week so that you don't have intense keyboarding pressures. It's just common sense, but it turns out to be epidemiologically verified common sense.

The employees required to stay on keyboard for hours at a time are more likely to have injuries than those who are distributing work over a broader period of time. So there are a number of ergonomic interventions that look promising, but again this is mainly based on risk information.

The third promising line of prevention work involves looking at the psychosocial demands of the job, and this is, in a way, the most challenging — but also the most promising — area if we're looking at soft-tissue injury prevention. For example, we know there are strong relationships especially between job control, the degree to which individuals have discretion and use a range of skills in their jobs, and back injuries and some other musculoskeletal injuries.

And these issues relating to job control have a lot to do with how repetitive the job is, how much discretion and latitude people have in the way they organize and see the path of their jobs. The less job control they have, the more likely they are to have musculoskeletal injuries, and the more likely they are to have cardiovascular disease, too.

Trying to organize the work so that it's enriched and more diverse and allows a greater

amount of personal discretion on the part of the worker holds promise for reducing injuries at work. This is something, again, where we don't have much intervention research to say that having done that works automatically; this is just based on the fact that these are known to be some risk factors for such injuries.

Currently, there's some modest work being done in Scandinavia showing that organizations that modify the kind of psychological/psychosocial risks actually are likely to bring down injury rates, too.

One area not mentioned, which we believe is very promising based on research, is interventions oriented to the workplace but precipitated by injury. It's not an attempt to adjust the exposure directly in the workplace before an injury occurs, but to enter the workplace after an injury occurs and make changes to the workplace.

We know now from a range of studies that everybody's attention is focused once an injury has occurred. So small adjustments to the workstation and small job modifications, which are typically inexpensive, significantly affect the duration of disability on subsequent re-injury patterns in a working population. Injuries can generate opportunities to reduce the duration of disability and also the subsequent re-injury patterns.

**RCR:** How important of a role can rehabilitation facilities play in these interventions and also in prevention efforts, and has their role been growing in recent years?

**Sullivan:** Let's talk about that. That is a very good question, and of course everyone wants to say, "Of course they can." But the role that they can play in prevention is generally at the level of secondary prevention, or what you do now that an injury has occurred.

This is because most rehabilitation specialists only get paid when they're dealing with injury. We have to be careful with payment methods to make sure the incentives aren't there to promote disability, which even though that seems rather intuitive or even inhumane, we sometimes inadvertently design poor payment structures for health care professionals.

The best role rehab facilities and rehab providers can play is to provide the constructive optimistic presentation of what the favorable natural outcomes are for soft-tissue injuries and then use evidence-based rules in treating and managing these conditions.

These rules are based on not overinvestigating or overtreating or overmanaging these conditions, which is the concern many providers have about how soft-tissue injuries are treated and managed. For uncomplicated injuries of the lower back, for example, there's no evidence in the absence of certain red flag conditions like tumor, fracture, or infection that there's any benefit from ordering X-rays. Yet in our jurisdiction, between 30% to 40% of all first encounters with a primary care physician for lower back injury result in an X-ray being ordered.

Not only is this unnecessary and not useful long term, but it also exposes workers to a radiation dose they don't need and could potentially be harmful. Applying rules of evidence providing a summary of evidence for the best treatment and management of back injury or injuries of the upper extremity is the best way we can ensure they are doing the optimal job in minimizing disability.

Another way rehab facilities can play a role is by maintaining an active relationship with the workplace, which often doesn't happen because rehab professionals typically are not paid to do that. Payment structures and relationships are extremely important in terms of what the incentives are for the rehabilitation professional. We have to make sure there's an alignment on those incentives for the rehab professional.

**RCR:** I've heard of some situations where rehab facilities are being paid directly by the employer to intervene when there is an injury and also to prevent workplace injuries. They base this on their own studies that it saves them a considerable amount of money. Is the trend of direct payment from employers increasing?

**Sullivan:** It is happening more frequently, especially for large companies because they feel they have a better measure of control this way. The one area of concern is that in unionized shops, which are a smaller proportion of all workplaces, trade unions are sometimes reluctant to have the employer charged with the care of injured workers because employers sometimes argue against the presence of injury conditions or — in extreme instances — against the presence of industrial disease.

The dominant trend still is toward that model, which is to have firm-specific contracting with rehab providers to promote optimal management and early return to work for injured employees.

**RCR:** Including prevention programs?

**Sullivan:** Yes, but this is one of those areas where everyone needs to be from Missouri in the sense that you want to be able to evaluate whether these really are making any difference. Sometimes what we see is the effects of good personal attention, not necessarily large-scale prevention efforts, as being effective.

We want to be able to evaluate carefully when these interventions are being effective, and there's good evidence that small modifications in the workplace with the involvement of rehab professionals can actually make a big difference in prevention, particularly in ergonomics.

**RCR:** You led an international congress on creating healthy workplaces. What were the congress' chief determinations about prevention and rehab in work settings?

**Sullivan:** There are so many lessons to be learned from different jurisdictions. Much of what we discussed at the congress is relatively well agreed-upon across the world. You find in North America we're a bit more skeptical about health professionals and the way they're paid and the benefits that accrue from them, than, say, the people in Europe.

I think that the issues involved in healthy workplaces are an engaged and motivated work force where the company shows concern, active participation and the delegated process of decision making, and an employee-friendly culture. These are recognized everywhere now as being important elements.

A high safety culture on the part of management is important. A number of people say that the presence of internal health and safety committees is important, too. And this is an area where the U.S. departs from rest of the world. Most countries have some form of mandated health and safety committee with the power to stop unsafe work, the power to refuse unsafe work, and they are protected by law. This is not a prominent feature of the landscape in the U.S.

**RCR:** From a rehab facility directors' perspective, what are some trends or changes that may help them focus their services and market in that direction?

**Sullivan:** One of these is the changing structure of the workplace itself. Services can be

offered to small businesses, for example, where typically there hasn't been the same market as large businesses. That's because small businesses haven't necessarily seen the benefits, and in some cases, the margins, to buy these services, but they are a growing portion of the work force — small- and medium-size companies in particular. So there is a market segmentation issue.

Also, the segregation of home contract and contingent workers is a growing portion of the labor force. Being able to provide services to those organizations and the people who work there is a kind of specialty need that is not well-developed. Most of the rehab providers that I know are selling to medium- and large-size companies because they are the legacy we've got and they are also the first market leaders.

However, we have nonstandard employment arrangements now, and we have to figure out ways to make sure they can benefit from these services, too. The other big challenge is people who have chronic problems and developing the capacity to build successful return-to-work programs for people who have been off of work for a long time. There's a high demand for these services, but we don't have a lot of successful program models we can point to.

Bringing the long-term disabled back to work can pay huge dividends even though they're only a tiny percentage of disabled employees. That is one market segment that looks very promising.

**RCR:** Do you have any specific suggestions for ways to reach the small and contract businesses?

**Sullivan:** One way to do it is to look at pooling, some kind of sectoral pooling, which involves trying to bring groups together to purchase your services in a consortium model. This involves the providers doing a little work to organize the groups so they're in a better position to respond to the rehab providers because they don't necessarily have effectual organizations allowing them to work as a consortia to purchase such services or to get rate breaks in purchasing.

*[For more information about Sullivan's book, you may contact the publisher at this e-mail address: info@ubcpublishing.com. For more information about Sullivan's discussion, contact him at the Institute of Work & Health, 250 Bloor St. E., Suite 702, Toronto, Ontario M4W 1E6, Canada. Or call (416) 927-2027, ext. 2118. Fax: (416) 927-4167. E-mail: tsullivan@iwh.on.ca.] ■*

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and he was highly motivated to increase his independence. The man has pushed the limits of the system and now is an apartment complex manager who does woodworking and uses electrical drills and power saws.

Those examples show how personal motivation plays a big role in the system's success, which is why the rehab facility has instituted a methodical pre-surgery and post-surgery program. (See story, below.)

Most of the first people to receive the Freehand system through the rehab facility's program have successfully adjusted to the device and are doing quite well, Moore says. ■

## Here's a look at how the hand program works

### *Pre-surgery care plays important role*

Whenever a health care provider is using expensive new technology, it's important to make sure all the groundwork is laid so patients may achieve the best possible outcomes. That's why Southern Indiana Rehab Hospital in New Albany, IN, established an extensive rehab program for quadriplegic patients receiving a new device that restores hand function.

Called the NeuroControl Freehand System and manufactured by NeuroControl in Cleveland, the computerized equipment allows C-5 or C-6 quadriplegics to write, hold a cup, brush teeth, and do other activities of daily living that involve their hands. In a special Freehand program, patients must work extensively with rehab staff to prepare and learn how to use the device.

Here's how the rehab portion of the Freehand program works:

- **Pre-surgery preparation:** Once the physician and a rehab team evaluate the patient and decide the person is ready both physically and emotionally for the Freehand System, they start the patient on an electrical stimulation program for four to 12 weeks prior to surgery.

The electrical stimulation program strengthens and increases muscle endurance, and it can be used while a person is sleeping. The patient follows a program established by the rehab therapist, and because the electrical stimulation device stores information about how long the patient

used it each day, it's easy to check on patients' progress, says **Linda Moore**, OT, director of inpatient therapy services for Southern Indiana Rehab Hospital. "The device lets us know how motivated patients are," she adds. "If a patient's not willing to do this electrical stimulation for six hours a day, then the patient probably is not going to be willing to do all the work involved in using the Freehand device."

A few Freehand candidates have demonstrated borderline motivation, Moore says. In those cases, the team establishes contracts with the patients and requires them to meet a certain level of preparation or they will not receive the Freehand system. Those who fail to meet the contract's terms are told they are not ready for the system, and their surgery is not scheduled.

The typical stay in an acute care hospital following the Freehand implant is three days. Post-surgery rehabilitation begins three weeks later.

- **Post-surgery rehab:** A therapist who has been trained specially to work with hands and with the Freehand System sets up the patient on a program that gradually will improve the patient's ability to operate the device. Patients visit outpatient rehab for three to four hours, three times a week for three weeks, Moore says.

Also, patients continue practicing exercises at home, training at night for six to eight hours. That involves setting intensity for the nine electrodes that are implanted into various hand muscles, says **Barb Ford**, OT, who works with Freehand patients. "On the very first day, after I set the patient up on an exercise protocol, I check to see how well each muscle is reacting to the stimulator," she says. "I set the intensity, which may take very little to make the muscle contract, or it may take a lot of intensity."

Setting the intensity requires practice, testing, and precision. If the intensity is set too high, it may spill over to muscles that are not supposed to be moving, and if it's too low, it will not provide enough power in the selected muscles, she explains.

Each patient has a laptop computer, which he or she carries to and from therapy. The laptop plugs into Ford's master computer, and Ford can program the patient's device. Patients are instructed to follow the exercise regimen she devised and return to see her in three to four weeks. "Most of the time, in three to four weeks I can see a lot of change in muscle strength," Ford says.

Ford assesses charts that demonstrate how the patient is using the system functionally. That

helps her program the patient's muscles into making various movements. For instance, a patient's hand may make a lateral pinch, which is the movement required to start a car. Or the muscles could contract in a palmar pinch, which is used for picking up a cup or a pen.

By the next visit, patients may be able to grip a cup, but without much control. Ford begins to teach them and their muscles the finer elements of control. "Therapists have to be very observant because you're watching the subtle muscle movements of tiny muscles," she notes. Changes in muscle strength determine the need for adjustment, she says. For instance, a patient's thumb may be too strong, causing him to crush the paper cup. In that case, the thumb electrodes will need adjustment.

This trial and error period can be frustrating for patients, Moore says. "They're so eager to get this system so they can pick up a can of Coke."

Now that the Freehand System has a number of graduates, some former patients have returned to the rehab facility to volunteer as coaches or supporters of current patients, Ford says. They talk with patients and offer tips on techniques they used that produced a good effect.

• **Discharge and reimbursement.** Discharge planning varies according to a patient's goals. Some patients may desire to eat and drink more easily, while others may want to perform hand-writing skills, Ford says.

"We've had some very unique goals, like being able to apply makeup, and the one gentleman wanted to use power tools," Ford says. "So we may make the thumb muscle stronger for the patient who wants to use power tools, or provide more ulnar power grip and a stronger wrist."

Reimbursement for the rehab portion of the system has not been a problem, says **John C. Shaw**, MD, medical director of Southern Indiana Rehab Hospital. Shaw also performs the Freehand surgery.

"The actual therapy with an OT and hand therapist working with patients isn't usually a problem," Shaw adds. "The biggest problem is the cost of the device, which is \$60,000 to \$80,000." The entire cost is about \$125,000, he says.

"We've struggled with a lot of insurance companies not approving the device because the insurance company often considers these patients not able to return to work," Shaw says. "For one insurance company, we waited for over two years. The family was ready to sue the insurance company, and then it was approved."

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As the patient who manages an apartment complex demonstrates, that is a short-sighted viewpoint. Some patients receiving the FreeHand System may be able to use a computer and a telephone, which are necessary for some occupations, and all patients may benefit from a better quality of life.

"This allows patients to feed themselves, write, and do things they could never do before," Shaw says. "So they're making tremendous gains in their participation in life that give them self-esteem and hope." ■

## Summer fitness program targets obese teens

### *Grant funding pays for therapist supervision*

Every community has a fair population of overweight adolescents who are on the verge of becoming obese adults and may suffer from lifelong health problems. In 1998, Schwab Rehabilitation Hospital in Chicago decided to help teen-agers with weight problems by partnering with a local acute care hospital to provide a summer teen fitness program.

"We had built a new hospital at Schwab and had a lot of square footage, and Cook County Hospital is a mile away, so we wanted to partner with them in helping children," explains **Lisa Thornton**, MD, director of pediatric and adolescent rehabilitation for the hospital.

"We asked them if they did anything with obesity, and they said they had a large population of obese children," Thornton adds.

The hospital had been providing group therapy and motivational education to the children.

Schwab offered to add a fitness component through the rehab hospital's exercise department.

Ranging in age from 12 to 19, the youths were healthy except for their obesity and related problems such as musculoskeletal disorders, which included back pain, knee pain, and other minor problems.

During the first summer of the program, rehab staff saw 22 youths for three hours, one day a week. The sessions were held in the evening, and the hospital had therapists stay late on those days, receiving compensation time. A psychiatric nurse ran a group therapy session for an hour and then provided an hour of motivational training.

Schwab approached the program holistically, offering healthy snacks. The teens listened to motivational speakers, and they benefited from group cohesion, Thornton says. "I think there is something powerful about a group of people who get together and try to work through a problem or similar issue," she explains.

Such group experiences also can help improve self-image. "My first hope is that their self-esteem is heightened, and they feel good about who they are," she says. "It might help them to learn that they're not just an eating machine, and eventually the weight will come off in a healthy manner."

The third component of the program was an hour of fitness training provided by a physical therapist. The fitness program included funk aerobics with music geared toward teens, hydrotherapy and water aerobics in the rehab hospital's pool, and basketball on the hospital's rooftop basketball court. The therapist also gave the youths tips on how they could include more exercise in their daily lives, such as by taking staircases instead of elevators.

"That first year, every single person but one lost weight by the end of the summer," Thornton says. "So we wanted to repeat it in the summer of 1999, but we had no funding."

Because the children came from families with limited financial resources, the two hospitals paid the costs in 1998. The second year, the program received a \$15,000 grant from the Maternal

and Child Health Coalition of Chicago. When the 1999 summer program ended, Schwab staff continued to hold monthly meetings with the teen-agers, motivating them to continue staying fit. The facility will seek a second grant for 2000.

"We wanted to plug them in with community agencies like the YWCA or Boys and Girls Clubs so they could continue with their fitness program, but I don't think that happened with any of them," Thornton says.

The youths continued to maintain the weight loss, she adds. ■

## Amputee patients achieve comfort with new limbs

*Program helps enhance patients' quality of life*

Patients who have had amputations generally have suffered a number of traumas in their lives, leading up to the moment when they are fitted for prostheses. A rehab facility can help reduce patients' pain, discomfort, and trauma by helping them prepare for and use a new limb.

HealthSouth Rehabilitation Center in Concord, NH, has a prosthetic clinic that provides that type of service, with the goal of helping a patient find the best fit for a new limb.

"We are an inpatient rehab hospital, and we do see a fair amount of amputee patients during the course of the year, coming from different parts of New England," says **Stuart J. Glassman, MD**, medical director of the facility.

The hospital's amputee program includes Glassman, a physical therapist who serves as coordinator, and the outpatient prosthetic clinic. The rehab provider works with prosthetists, who make the artificial limbs. "We assess overall any issues the patient has," he says. "For pain we use anti-seizure medication."

The program's initial goal in working with amputee patients is to get their limbs shaped properly for an artificial limb. "We also focus on cardiac endurance for amputee patients, because it takes a lot more effort to walk with an artificial limb, and if they have diabetes, it will be much tougher."

Building a prosthesis typically works this way: A cast impression is made of the person's remaining limb. From the cast, a temporary socket is made that can be easily adjusted to fit the person's residual limb. It consists of a single type of

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plastic molding. The person may have a change in the circumference of the residual limb over time, so a new socket may have to be made.

Problems arise usually when a patient is using a bad prosthesis, one that has too much space between the real and artificial limbs. And a rehab facility that works with such patients can make a huge difference in their quality of life by helping them find and use a proper fit, Glassman says.

He provides this case study, as an example:

A 17-year-old boy was in a car accident that caused him to lose his left leg above the knee. He returned to his boarding school about six months after the accident. The school's health clinic called HealthSouth because the boy's artificial leg was causing him considerable pain. "He came into the clinic, and we could see a lot of skin breakdown on his residual leg, and there was a lot of redness and pain around it," says Glassman.

The problem appeared to be that the socket fitting around his residual leg was much too large. "He was getting some skin irritation from it, which is why he was in pain," Glassman recalls.

The prosthetic rehab staff advised the boy to stop using the artificial limb for two weeks, and they gave him treatment for the skin problems. When he returned to the rehab facility, his leg was beginning to heal, but the prosthesis still was too large. Glassman discussed the problem with the boy's family and suggested he have a new socket and new leg made. "Within a day of putting on his new artificial leg, he was able to walk around the hospital. He was on the treadmill for 20 minutes the next day."

That same year, the teen-ager participated in a national junior amputee soccer tournament, golfing, and bicycling. "His school life now is such that some people can't tell he has an artificial leg," Glassman adds.

The boy's mental outlook has also improved. Before the rehab facility helped him fix the problem, he suffered from a lack of confidence and a poor self-image. "Now he feels like his whole life has turned around, and he has a tremendous amount of confidence, plus no pain," Glassman says. ■

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