

Focus on Rehabilitation

A PUBLICATION FROM THE KESSLER REHABILITATION CORPORATION

The role of acupuncture in medical rehabilitation

The ancient Eastern treatment is increasingly accepted today for use with a wide range of patients in the rehabilitation setting.

Yekyung Kong, M.D.



In the field of physical medicine and rehabilitation, pain is a significant obstacle that patients must overcome to maximize their recovery and improve their quality of life. Much emphasis has therefore been placed on treating pain with various pharmacologic agents and other modalities. Acupuncture is gaining greater popularity as one of those modalities, because it has few side effects and is well tolerated by most patients.

Management of pain is the main role for acupuncture treatment in a medical setting today (see box, page 7). Among those who could benefit from acupuncture are patients with myofascial pain syndromes, musculoskeletal injuries, sports-related injuries such as acute sprains and tendonitis, and various neurological conditions, including stroke and spinal cord injury. Many patients with headaches, arthritic conditions and “phantom pain” after amputation can also benefit from acupuncture, and some studies have indicated that the treatment, when used with other modalities, can control spasticity.

The philosophy of acupuncture

The insertion of needles into specific acupuncture points in the body is the foundation of acupuncture. Acupuncture needles can also be electronically stimulated to increase effectiveness. A clear mechanism of action

for acupuncture’s effect has not been determined, but the pain control activity may be linked to the increase in central nervous system activities of endogenous opioids and biogenic amines. Research has shown that these substances are released during acupuncture treatment. Other studies—using functional magnetic resonance imaging—show that brain activity during pain stimulation decreases with acupuncture treatment, particularly with electro-acupuncture.

The practice of acupuncture originated in China in the second century B.C. Today, most U.S. practitioners employ a hybrid model of acupuncture that combines classic Chinese

The human body has 401 “acupoints,” each with its own medical indication.



techniques and European-style methods. As with all Eastern healing arts, the role of the physician with acupuncture is to help the patient maintain the body’s harmonious balance, both internally and in relation to the external environment. Treatment is therefore based not only on diagnostic evaluations, but also on an assessment of the patient’s innate constitution, including psychological and physical

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LETTER FROM THE EDITOR

Here come the Baby Boomers

Bruce M. Gans, M.D.



A major challenge looms for the rehabilitation field, and the time to get ready is now. I refer to the bulge in the population charts known as the “Baby Boom,” the huge number of newborns this country produced from 1946 to 1964, amid the prosperity that followed World War II. These “babies” are now from 38 to 56 years old. They—I should say we, as I am one—are approaching the years when age-related disabilities threaten, and therefore when rehabilitation services are needed.

The Census Bureau graph below shows the increase, recent and projected, in the number of Americans ages 65 and older. Note how sharply the graph line climbs in the years when Boomers will reach that age. Beyond 65, fast-growing numbers of people have limitations in one or more activities of daily living. That translates into an enormous need for rehabilitation services. We Boomers will fuel an explosion in demand for rehab—not only because there will be more of us, but also because we will be living longer and demanding more.

There will be a greater prevalence of musculoskeletal impairments. People will get their knees and hips replaced, and then replaced again when the first replacements wear out. Age-related disorders such as stroke and the degenerative conditions of old age will become more prominent. And all of these conditions will require inpatient services as well as outpatient care.

In the acute care hospital world, it is now being predicted that all the inpatient bed capacity taken out of the system over the last 10 to 15 years will need to be restored to accommodate this aging population. And the rehab inpatient business is already using most of its capacity to meet current requirements. I believe there will be a 10 percent or 20 percent surge in demand for rehab inpatient bed capacity beyond what is now available.

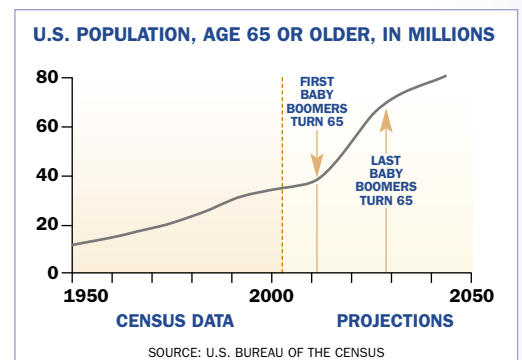
Also, the Baby Boomers will not go gently into decline. We will be an insistent population that resists the loss of

function. People will ask more from their joints, muscles and backs, and want interventions to help them sustain not only health and fitness, but also athletic performance capabilities. They’ll be increasingly dissatisfied with the memory losses that appear to accompany normal aging. And the Boomers will include a heavy contingent of influential, upper middle-class people who won’t stand for unresponsive service. That call bell had better be answered promptly.

What does all this mean for the rehabilitation community? It means we have less than a decade to prepare for the deluge. We are going to need more physiatrists, more physical therapists, more nurses and an ever-stronger orientation toward personal care and service. We will also need more beds. (At Kessler, we have announced a multi-million-dollar building expansion campaign for our hospital in West Orange, N.J.) We should prepare as a field, too, for even greater public visibility than we enjoy today. By taking decisive steps now, we can help to assure that that heightened recognition will be positive.

Better get ready—the Baby Boomers are coming!

—Bruce M. Gans, M.D., Editor-in-Chief





The care of lymphedema

Accurate diagnosis and effective treatment can ease discomfort, prevent complications and help patients return to a more active life.

Kathleen Francis, M.D.

Each year in the United States, roughly 25 percent of the patients who undergo axillary dissections and/or radiation therapy for breast cancer will develop lymphedema, resulting in an abnormal and disfiguring swelling in the affected arm. Lymphedema results from insufficiency of the lymphatic system, which causes abnormal accumulation of protein-rich interstitial fluid. Until recently, knowledge of the pathophysiology of the lymphatic system and expertise in treating lymphedema have been surprisingly scant in the medical community. Today, though the condition is still generally incurable, effective multidisciplinary treatment for lymphedema is more widely available.

Diagnosis of lymphedema is nearly always clinical, based on history and physical exam. The patient's history helps identify the condition as primary or secondary. Primary lymphedema results from an inborn deficiency of the lymphatic system, but may not become clinically apparent until adolescence, young adulthood or later. Primary lymphedema may be hereditary or sporadic. (It is referred to as Milroy's disease when it is present at or soon after birth.) It affects females more often than males and generally begins asymmetrically in one distal lower extremity, with eventual involvement of the other extremity (although any body part containing lymphatics may be affected).

Secondary, or acquired, lymphedema affects more than 2 million Americans. In the U.S., it usually results from cancer and its treatment, including surgical lymphadenectomy and radiation, and in some cases tumor invasion of lymphatics. Non-neoplastic causes include trauma, venous obstruction and infection. Combination forms of lymphedema include lipo-

lymphedema and lymphedema associated with chronic venous insufficiency.

The physical exam identifies the condition's stage of severity. *Stage 1 (spontaneously reversible)* is generally early, mild lymphedema that reverses at least transiently with simple elevation. *Stage 2 (not reversible with elevation)* shows secondary tissue changes,



Lymphedema treatment, before-and-after views

such as fibrosis, liposclerosis and chronic inflammation. *Stage 3 (end-stage)* shows severe skin and tissue changes, including woody dermatoliposclerosis, hyperpigmentation, papillomatosis and massive limb deformation.

Diagnostic signs include enlargement with or without pitting, increase in skin folds or creases, change in skin texture and/or asymmetric increase in subcutaneous adiposity. A positive Stemmer's sign—the inability to easily “tent” the skin on the dorsum of a digit, classically the second toe, denoting dermal fibrosis and edema—is nearly pathognomonic for lymphedema.

Testing can help rule out other causes of edema, including increased capillary pressure, decreased plasma proteins and increased capillary permeability. Studies such as computed tomography (CT) or magnetic resonance imaging (MRI) are generally unnecessary, but may be useful to rule out new or recurrent malignancy. Venous Doppler studies may be important to assess for deep

venous thrombosis. Because direct and indirect lymphangiograms can be harmful to the lymphatics, they are rarely used except when visceral lymphatic surgery is planned. But lymphoscintigraphy, a minimally invasive nuclear test of lymphatic function, may be helpful when the diagnosis or cause is unclear. It often reveals absent or poorly functioning lymphatics.

Complications of lymphedema include recurrent cellulitis, fibrosis and limitations in range of motion, pain syndromes, atrophy, impaired cosmesis and psychological distress—and in a few cases of long-standing lymphedema, fatal lymphangiosarcoma.

The most successful treatment for lymphedema is gentle, noninvasive complex decongestive therapy (CDT). Even the most severe, chronic cases of stage 3 lymph-

edema, characterized as elephantiasis, can respond dramatically to CDT, causing the return of a nonfunctional, massively deformed limb to nearly normal proportions. CDT, performed with the assistance of a certified lymphedema therapist, is a four-part regimen:

- 1. Manual lymph drainage (MLD).** In 45- to 90-minute sessions, usually daily at first, the therapist massages the limb to stimulate increased volume and frequency of lymphatic pumping by rerouting the lymph flow around blocked areas into healthy lymph vessels, which drain into veins.
- 2. Compression bandaging.** To prevent the reaccumulation of evacuated edema fluid between MLD treatments, the therapist applies multiple layers of gradient short-stretch bandages, which are initially worn nearly 24 hours a day, often with foam pieces under the bandages to break tissue fibrosis.
- 3. Exercise.** Remedial proximal-to-distal exercises, with bandages in place, aid

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An Interview with John R. Bach, M.D.

Treatment that's a breath of fresh air

Conventional handling of patients with neuromuscular disorders has it all wrong, says the author of a new book on mechanical ventilation. In many cases, he contends, a tube in the throat is just what patients do *not* need.

A definition of happiness wasn't on the agenda when *Focus on Rehabilitation* recently interviewed John R. Bach, M.D., professor and vice chairman of the Department of Physical Medicine and Rehabilitation at the University of Medicine and Dentistry of New Jersey, New Jersey Medical School, who is also on staff at the Kessler Institute for Rehabilitation. But with Dr. Bach, you often get more than you bargain for. For patients with neuromuscular disorders, that can mean more independence than they had been led to believe was possible. As for the medical establishment, it's still getting used to Dr. Bach and the things he has been able to accomplish.

FOCUS: Tell me about your new book, *Noninvasive Mechanical Ventilation*.

BACH: People with generalized muscle weakness due to neuromuscular disease develop life-threatening respiratory difficulties. Three muscle groups are involved: inspiratory muscles for breathing, expiratory muscles for coughing and throat muscles that protect the airway. Traditionally these patients have had tracheostomy tubes put in to prolong their survival. But you lose a lot when you get a trach



John R. Bach, M.D., (kneeling) helps patient Carl Arnheiter learn how to use a device that helps him cough. He is assisted by respiratory therapists Louis R. Saporito (left) and Jeffrey Ricci.

tube. It makes speaking much more difficult, for example. So we try to avoid using the trach tube and keep people alive, healthy and out of the hospital. That's what this book is about: ways to assist inspiratory and expiratory muscle function so that people who have trouble breathing or coughing can stay healthy without

getting a tube in their necks. And it's unique. Nobody else has ever written a book on noninvasive mechanical ventilation.

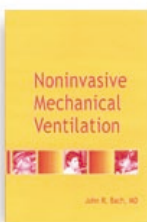
FOCUS: Do these patients receive appropriate treatment in most places?

BACH: No, unfortunately. What often happens is that they get a cold or bronchitis and develop airway secretions they're not strong enough to cough out. So the mucus lies in the lungs, the bacteria multiply, the lung starts to collapse and atelectasis and pneumonia set in. Patients go into respiratory failure and are taken to the local hospital, where ER doctors give them oxygen because they're short of breath. But that makes their breathing much worse. Restoring the oxygen in the blood turns breathing off, so that carbon dioxide goes much higher, and that's like walking into a vat of fermenting grapes. With high

carbon dioxide you lose consciousness and stop breathing. So patients get intubated. And when doctors can't extubate effectively, patients get a tracheostomy tube attached to a ventilator—usually for the rest of their lives. My book tells people how to avoid that—avoid episodes of respiratory failure, avoid tracheostomy tubes and avoid hospitals.

FOCUS: But don't some doctors disagree with your approach?

BACH: Yes. Doctors are taught that if you can't breathe, you need to have a tube in your neck. And nurses are more familiar with how to use ventilators through trach tubes than they are with noninvasive ventilation. So doctors tend to think patients are safer if they're trached.



Noninvasive Mechanical Ventilation (ISBN 1-56053-117-7, with 600 pages and more than 200 illustrations) may be ordered from Hanley & Belfus Medical Publishers for \$39. Search online at www.hanleyandbelfus.com or dial 1-800-962-1862. The book describes the use of inspiratory and expiratory muscle aids to prevent pulmonary complications of lung disease and conditions with muscle weakness. It also describes treatment and rehabilitation interventions to help patients with these conditions avoid tracheostomy and maintain independence. The author, John R. Bach, M.D., has lectured in more than 30 countries and has eight other books and more than 250 publications to his credit.

New rules limit how long residents can work

Joel A. DeLisa, M.D., M.S.



The Accreditation Council for Graduate Medical Education recently approved new limits on resident work hours, which

include the following:

- Residents must not be scheduled for more than 80 duty hours per week, averaged over a four-week period, although programs may apply to their sponsoring institution's Graduate Medical Education Committee for an increase in this limit of up to 10 percent if they can provide a sound educational rationale.

- One day in seven (averaged over a four-week period) must be free of patient care duties.

- Calls should be assigned no more often than every third night, averaged over a four-week period.

- Call duty is limited to 24 hours, with an added period of up to six hours for continuity and transfer of care, educational debriefing and didactic activities. No new patients may be accepted after 24 hours.

- A 10-hour minimum rest should be given between duty periods.

- When residents are called into the hospital from home, the time spent in the hospital must be counted toward the weekly duty-hour limit.

The new standards also ensure that faculty will be available for residents at all times, and they make institutions responsible for enforcing resident duty-hour limits and faculty schedules. Faculty and program directors must assess residents for signs of sleep loss and fatigue, and institutions are responsible for educating staff and faculty about sleep issues. Also, participating institutions must provide residents adequate back-up support, especially for routine activities or when patient care responsibilities are

especially difficult or prolonged.

These rules go into effect July 1, 2003, although some academic medical centers implemented them this July.

While the standards will affect surgical training programs more than those of psychiatry, they will have ripple effects. For example, the New Jersey Medical School Institutional Graduate Medical Education Committee has mandated that moonlighting is now forbidden for all residents in all specialties. This adversely affects some of our own residents. Also, all hospitals have reimbursement caps on the number of their training slots. To comply with the new limits, hospital

The new restrictions on resident work hours could cause psychiatry to lose resident slots.

CEOs may reallocate positions to help offset surgical and anesthetic staffing needs. Psychiatry training programs could lose slots in this process.

One of the keys to these new work-hour rules will be the monitoring and evaluation of the training programs to ensure compliance. The goal of all training programs is to maintain that fine balance between education and service that results in high-quality education and safe patient care.

While many of the changes they bring reflect common sense and good patient care, the new requirements will be a major hit to all hospitals, including rehab hospitals. Our program training directors should be actively involved in how they are implemented in their local areas. **FOCUS**

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FOCUS: Without the tube, isn't there a greater risk of suffocating?

BACH: No, no. In fact, if you *do* have the tube, you have a much higher risk of dying than if you're managed noninvasively. But most doctors don't know that. I did a study on 700 ventilator users, with and without trach tubes, and found that the patients without trach tubes who were using the vent 24 hours a day noninvasively had much better hospitalization and survival rates than those who were trached.

FOCUS: Does your method require a more active role for the patient?

BACH: Yes. As a rehab doctor, I don't just tell patients to follow orders. I teach them how to use and adjust the ventilators and the assisted coughing. The more we're able to train patients, the safer and more independent they will be.

FOCUS: So your approach fits in with the philosophy of rehabilitation?

BACH: Exactly. Unfortunately, I'm one of the few rehab doctors who actually take care of people with neuromuscular ventilatory failure. There are only a handful in the whole country. All the rest of these patients go to other physicians, who don't do anything to prevent them from developing respiratory failure. Then they either die or get trached.

FOCUS: What does the neurology specialty society say about you?

BACH: They can't stand me. Pulmonary journals publish my articles, but neurology journals reject them. Most neurologists think these patients' quality of life is too poor to justify their surviving with any kind of ventilator. But is that true? Consider what constitutes happiness. What makes you happy is when reality exceeds expectations, and that can happen for these patients. Doctors should let the family make the decisions, and not play God themselves. **FOCUS**

Dr. Bach can be reached at bachjr@umdnj.edu.

It's time to pass patient protection legislation

Bruce M. Gans, M.D.



Patient protection legislation, also known as “a patient’s bill of rights,” has been discussed in Congress for years but has yet to be enacted

into law. In fact, recent negotiations between the White House and the Senate appear to have failed. The rehabilitation community has long supported such bills because they would help to assure access to our services for those who need them.

In the year since 9/11, other concerns have naturally been paramount in Washington. But I believe that, with a new round of healthcare inflation upon us and therefore a new set of pressures to limit access to care, it’s time to put patient protection legislation back on the front burner.

An example of such legislation is the Bipartisan Patient Protection Act of 2001, known as the McCain-Edwards-Kennedy bill, which the Senate passed last year but which did not make it to the President’s desk. I think we should continue to fight for its enactment.

Insurance companies—especially managed care plans—have a financial incentive to take in as many dollars as they can in premiums and spend as few dollars as possible on medical services. They do this by controlling the prices they pay for these services and by selecting the services they’re willing to pay for at all. And they make those selections in two ways: by defining services they provide under the contract so that certain benefits aren’t covered, and by reviewing “medical necessity” and thus often ruling, either before or after a service has been provided, that in their view the patient didn’t really require it.

In rehabilitation, for example, we

often see patients who have suffered a stroke and are paralyzed on one side of the body. The acute care physicians taking care of them will want to transfer them for inpatient rehab, but the insurance company will decline to cover our hospital-based rehabilitation services. They will often argue either that the patient doesn’t need hospital-level care at that point and can do all right at home with outpatient services, or that rehab services don’t offer any demonstrated benefit and thus aren’t worth paying for at all. Either argument is convenient for insurance companies because it just-

I invite the foes of such a law to tell my patients why they’re not worth helping.

fies the comforting feeling of pennies pinched and bottom lines protected.

What recourse does a patient have to challenge the decisions an insurance company makes? The proposed patient protection legislation has several components designed to (1) require insurance companies to pay for certain services under certain circumstances, (2) allow patients to use objective, neutral-party medical opinions to challenge insurance companies’ medical necessity denials, and (3) make insurance companies legally liable for any harm that comes to patients because of their denials.

Earlier I spoke of “convenient” arguments. Devil’s advocates may be asking: Can’t my own argument be seen as convenient, too? I work for a provider organization; by advocating access to coverage for our services, am I not defending my company’s ability to get paid—*our* bottom line?

Absolutely. I neither minimize nor apologize for this fact. Like everyone else in the economy, we in rehab do

need to be paid for what we do, at least most of the time. If patient protection legislation will help us to get paid, more power to it.

But there is more to the argument. Those who need our services are a vulnerable population, and we see their faces every day. They’re neither the tycoons who embrace managed care for its profits nor the healthy folk who benefit from its thrift. They’re people whose lives have been devastated by illness or injury, and it’s all too easy for them to be lost in the political shuffle. The very resource they’re looking to to provide help at a time of catastrophe—the health insurance that is supposed to meet their needs—becomes the next catastrophe when it says no.

Inevitably, our patients are some of the biggest spenders of the nation’s healthcare resources. A person with a brain injury, for example, can easily cost an insurer \$250,000 a year for several years. But we *can* help these people. And I invite the foes of patient protection legislation to explain to my patients’ faces why they’re not worth helping.

So—what can you do? Help keep the topic of patient protection legislation alive. Be ready for “calls to action” from your professional organizations, and write your representatives in Congress. And don’t stop at the national level. Support the adoption by states of model health-insurance programs that include protections for patient access. Work to educate the public about the value and efficacy of rehabilitation services. And keep on fighting to give patients, one by one, the best possible care. **FOCUS**

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makeup. It is also based on energy deficiencies that can be determined from a person's affinities and dislikes. The patient who seeks salt in his or her diet, for example, may do so to compensate for a kidney deficiency.

Acupuncture is predicated on the belief in an inherent energy, called *qi* (pronounced "chee"), which must flow smoothly through the body in channels known as meridians to maintain health and balance. (These meridians have been shown to correspond closely to Western medicine's nervous system pathways.) According to traditional Chinese medicine, pathologies are caused by blockages and stagnation in these pathways. Along these channels the human body has 401 "acupoints," and acupuncture involves the insertion of needles into these acupoints to open the energy flow through the meridians. For each acupoint, there is a medical indication.

Risks and benefits of treatment

Possible side effects and complications from acupuncture are minimal. They include infection, bleeding, syncope, a retained needle and puncture of an organ. Infection with blood-borne disease occurs rarely, since disposable, sterile needles are used. Pneumothorax can occur as a complication. Less frequently reported are pneumoperitoneum, hemothorax, cardiac tamponade and penetration of the kidney, bladder and spinal medulla. To minimize these risks, acupuncture should be performed only by experienced practitioners.

The potential benefits of acupuncture far outweigh the rarely reported risks associated with it. Benefits include improved functionality and quality of life for patients, a reduction in the need for pain medications and an increase in productivity. Patients who respond to acupuncture treatments may also be more likely than others to reach specific goals, such as the ability to work and live a more independent life. Most of our patients at Kessler achieve a 40 percent to

60 percent reduction in pain levels with acupuncture treatment. Some report relief with acupuncture after having had repeated surgeries and chronic pain for 10 years.

One of the key advantages of acupuncture is its compatibility with allopathic medicine. It can be used readily as an adjunctive therapy with nearly all Western medical and therapeutic treatments. (Patients who take

until the next evaluation. Some patients, particularly those with chronic pain, may require maintenance treatments for lasting effects.

Since many rehabilitation hospitals do not have an acupuncturist on staff, it may be necessary to locate an off-site practitioner. One useful source of referrals is the American Academy of Medical Acupuncturists (AAMA), which provides a list of physician

Conditions treated with acupuncture

The World Health Organization recommends acupuncture for these orthopedic, gastrointestinal and neurologic conditions in addition to a number of other disorders.

ORTHOPEDIC DISORDERS

- Periarthritis humeroscapularis
- Tennis elbow
- Sciatica
- Low back pain
- Rheumatoid arthritis

GASTROINTESTINAL DISORDERS

- Spasm of the esophagus and cardia
- Hiccups
- Gastroptosis
- Acute and chronic gastritis
- Gastric hyperacidity
- Chronic duodenal ulcer
- Acute and chronic colitis
- Acute bacterial dysentery
- Constipation
- Diarrhea
- Paralytic ileus

NEUROLOGIC DISORDERS

- Headache
- Migraine
- Trigeminal neuralgia
- Facial paralysis
- Paralysis after apoplectic seizure
- Peripheral neuropathy
- Paralysis caused by poliomyelitis
- Ménière's syndrome
- Neurogenic bladder dysfunction
- Nocturnal enuresis
- Intercostal neuralgia

anticoagulation medication should be treated with caution, however, due to an increased risk of bleeding.)

Regimens vary among patients

Acupuncture treatment begins with a detailed patient history and an examination. Treatment plans may vary based on both allopathic principles of Western medicine and Eastern medical practices. Patients are usually treated for 10 to 40 minutes per session. Most patients are treated once a week, although acute cases may be seen more often. After five weeks, an evaluation is done to determine whether the patient is benefiting from the regimen. If the patient feels some relief or improvement, the treatments continue

acupuncturists on its web site, at www.medicalacupuncture.org. Both physician and nonphysician acupuncturists are licensed by state boards of medicine, and referring physicians should verify acupuncturists' licensure.

As acupuncture becomes more widely accepted, more rehabilitation patients and physicians will likely become interested in it. Because of its wide applications and its ready adaptability to allopathic medicine, acupuncture promises to play a growing therapeutic role. **FOCUS**

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The care of lymphedema

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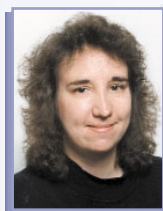
drainage by activating the muscle and joint pumps of the extremity, increasing lymphokinetic activity and, over time, reducing the swelling.

4. Skin care. Meticulous skin care techniques and general hygiene help reduce the risk of infection. Patients with lymphedema are at increased risk for developing skin and soft-tissue infections because of the presence of protein-rich edema fluid, which provides an ideal environment for bacterial growth. Even microscopic skin openings can allow bacterial entry and resultant cellulitis.

Most infections are streptococcal cellulitis. Although routine use of prophylactic antibiotics for minor trauma of the affected limb is discouraged, immediate treatment with appropriate antibiotics is advisable for signs or symptoms of cellulitis. Most episodes of cellulitis respond well to dicloxacillin 500 mg QID, first-generation cephalosporins such as cefadroxil or cephalexin, or macrolides such as erythromycin or clarithromycin. Some patients with severe or unresponsive infections may require hospitalization and treatment with intravenous antibiotics.

Until research changes the standard of care, physicians will continue to focus on an accurate diagnosis and successful therapy to reduce swelling, decrease infection and improve function so that patients can return to their usual activities. **FOCUS**

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Clinical Pearls

When to transfer a patient to acute care

Allison Averill, M.D.

Unfortunately, there are no widely accepted protocols on when to transfer a patient from the rehabilitation facility to acute care. The general goal is to transfer any patient with a situation that cannot be handled in the rehabilitation facility. For an acutely ill patient that decision is clear-cut. Judgment is needed, however, when the patient is potentially ill with a life-threatening malady that cannot be treated on-site. (Facilities attached to a hospital will have a higher threshold for transferring patients, since they have easier access to emergency medical care.)

Fewer than 10 percent of patients at our facility are transferred to acute care, about half of these within the first three days of admission to rehabilitation. The patient who is making the transition from acute care to rehabilitation therefore requires close monitoring.

Those who generally call for transfer to acute care include patients with:

- high fever (102° or higher)
- signs of sepsis
- a history of heart or lung disease, which may complicate medical decisions
- suspected pulmonary embolism
- chest pains and abnormal EKG
- unstable vital signs

The exception is the patient with a diagnosed condition that can be readily handled on-site—for example, the patient with pneumonia who is not hypoxic and is breathing easily, or the patient with a high fever who does not look toxic and has an obvious source of infection. These patients generally can be managed in the rehabilitation facility with antibiotic therapy.

But consider the patient who looks sick and has an increased heart rate and dropping blood pressure, but only a moderately high fever of 101.5°. Generally, this patient should be transferred. Chest pains and abnormal EKG are also reasons to transfer, although if there are chest pains with a cardiac history, one may decide to transfer the patient immediately without performing the EKG.

The most common reason for transfer is probably chest pain, followed by a change in mental status, which could indicate a stroke. However, such a change may also be caused by medication, dehydration or infection, and we consider these factors before transferring the patient. Abdominal pain also calls for investigation, since patients can develop gall bladder disease, appendicitis or other problems requiring immediate treatment. Commonly, however, the cause of abdominal pain is constipation, which can be managed in the rehabilitation facility. Cases of pneumonia and sepsis require judgment as well, and the decision to transfer these patients depends on the severity of the illness. The patient with deep-vein thrombosis (DVT) who cannot be anticoagulated due to contraindications is transferred for Greenfield filter placement. Those with DVT and no medical contraindications can be treated in the rehabilitation hospital with low-molecular-weight heparin. **FOCUS**

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