

Rehabilitation

SPRING 2014

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Technology transforms the residence—and the resident

> BY MONIFA BROOKS, M.D.,
AND JILL GARCIA, M.S., OTR/L, ATP

NEARLY EVERYTHING in our homes today can be automated and controlled via computer, smartphone or tablet. For most people, this luxury makes life more convenient. But for individuals with significant mobility disabilities, something as simple as adjusting a ceiling fan without assistance from another person becomes far more meaningful than a mere creature comfort.

At Kessler Institute for Rehabilitation, physiatrists, occupational therapists and other clinicians are bringing such technology to some of the most severely limited patients, helping them regain control of not just their homes but also their lives.

Mass Appeal

Assistive technology is an overarching category of devices and products designed specifically for persons with disabilities to help improve their functional ability and independence. It ranges widely from wheelchairs to prosthetics to walkers to speech and augmentive communication aids. But while these tools certainly can enhance individuals' capabilities and quality of life, often they are expensive, not covered by insurance and rarely reimbursed by workplace compensation policies. Thus, their usability for the millions of patients who could benefit from them is moderately limited.

Thanks to the advent and proliferation of smartphone and wireless technology, however, an alternative has emerged: automation devices. Automation of the home alters the control of electrical systems within the residence. Features like heating and cooling, lights, alarm systems, doorbells, televisions, stereo devices or any other equipment or system that runs on electricity can be



The use of a tablet and similar devices can improve function, independence and quality of life.

automated or computerized rather than operated manually. Because this technology was developed primarily for the public as a means of convenience, it is much more widely available and affordable than most assistive devices, which are generally sold only through medical device retailers. And because many patients already own a smartphone and a computer and use them daily, automation of the home offers similar benefits as assistive technology but in a more accessible manner, from both a financial standpoint as well as a pragmatic one.

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Considerations for end-of-life care



CARE FOR PATIENTS in the final days of their lives is not typically discussed in our field, but it should be. Approximately 25 percent of Medicare dollars are spent in the last year of a person's life,¹ often on unnecessary or ineffective treatments that may bring pain and suffering to patients and families.

Hospice can help prevent this. That is why the post-acute care community needs to ensure that hospice care is incorporated into management strategies for the appropriate patients. Unfortunately, too many health professionals feel uncomfortable talking about care

when a patient's death is near, perhaps, in part, because to do so means admitting that there is nothing else we can do to cure the individual—something many consider a failure.

Having had several professional and personal experiences with hospice care and programs, I can assure you that failure is the furthest thing from the truth. Hospice is a wonderful resource for the family and patient, designed to ensure that a person's final weeks and months are spent as free of pain and with as much functional capacity as possible, and that the family is provided substantial support. Isn't that similar to the goals for patients in rehabilitation for whom we also do not expect recovery?

Yet most eligible patients are not referred to hospice until they are very close to death; a substantial number die before they can be admitted.² When admission to hospice comes "too late," families report greater unmet needs and lower satisfaction with the service.³ They also report that physician reluctance to refer to hospice is a major barrier.⁴

Because we in rehabilitation often care for those with terminal diseases or shortened life spans, we have a responsibility to understand hospice and explain the option to our patients. An important point is that hospice care is not just for cancer patients. It is available for any patient with an expected life span of six months or less.

Although hospice is generally provided in a home setting, not a rehabilitative environment, it is certainly possible to recommend that patients be discharged from the post-acute setting to hospice care, and to incorporate hospice into our upstream and downstream relationships with other facilities.

Put simply, we need to remember that hospice can and should be part of the package of care for certain patients so they can maintain a high quality of life in their final months.

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

¹ Riley GF, Lubitz J. Long-term trends in Medicare payments in the last year of life. *Health Serv Res.* 2010 Apr;45(2):565-76.

² Farnon C, Hofmann M. Factors contributing to late hospice admission and proposals for change. *Am J Hosp Palliat Care.* 1997 Sep-Oct;14(5):212-8.

³ Teno JM, Shu JE, Casarett D, Spence C, Rhodes R, Connor S. Timing of referral to hospice and quality of care: length of stay and bereaved family members' perceptions of the timing of hospice referral. *J Pain Symptom Manage.* 2007 Aug;34(2):120-5.

⁴ Schockett ER, Teno JM, Miller SC, Stuart B. Late referral to hospice and bereaved family member perception of quality of end-of-life care. *J Pain Symptom Manage.* 2005 Nov;30(5):400-7.

Early mobilization: Prioritizing rehabilitation in disuse atrophy treatment

> BY THOMAS E. LAMMERTSE, M.D., AND BRUCE POMERANZ, M.D., MMM

ALTHOUGH HOSPITALS are places of recovery, they also bring about potential challenges that can affect patient health adversely. Bed rest, traditionally regarded as a standard practice for some patients and particularly for critically ill populations, has emerged as one such difficulty.

The subsequent development of disuse atrophy, brought about by immobilization, including bed rest, can significantly impair physical functioning and quality of life. But using modern principles of rehabilitation therapy, this condition is not only reversible—it is also preventable.

Use It or Lose It

When patients are unable to move, disuse atrophy results, causing muscle shrinkage, weakness, loss of tone and an inability to perform functional activities. This can arise from a number of situations. Individuals who are extremely ill—those in the intensive care unit, experiencing sepsis or on respiratory ventilators, for instance—are at risk of immobilization. The same holds true for patients with neuromuscular diseases, like amyotrophic lateral sclerosis, or various traumas and spinal cord injuries. Moreover, debility may result from a wide spectrum of conditions (e.g., severe cardiac disease with secondary muscle atrophy), which can limit physical activity and may lead to general muscle weakening.

Symptomatic patients may demonstrate loss of strength, a decrease in balance or decrements in fine motor skills, such as writing; or, if upper extremities are impaired, difficulty with lifting and pushing.

Rethinking the Past

Historically, the tendency of medicine to promote bed rest for many patients was common. However, through clinical research and advances in patient care, it has become evident that negative consequences can result when an individual is immobilized, even for a few days. As rehabilitation medicine evolves, increasingly we appreciate the vital importance of activity—to the extent that a patient is able and can safely engage in physical mobility—and that bed rest should be avoided as much as possible.

It is easy to underestimate the impact of immobility for even a brief period, particularly among populations who are older, are frail or have chronic diseases like arthritis or cardiovascular dysfunction. Intuitively, it might seem that exercise and activity for such patients could be contraindicated. But when one is immobilized for even a few days, functional status and ability to sufficiently and independently engage in activities of daily living can deteriorate. Without halting and reversing the process, muscle weakness and atrophy can further decline surprisingly quickly.

The Sooner, the Better

Physical and occupational therapy can go a long way in stopping and ameliorating complications of disuse atrophy and weakness. Evidence is mounting that even the most seriously ill individuals should be mobilized to any degree possible without delay. Utilization of rehabilitation therapy can help minimize weakness and reverse muscle atrophy. These activities can be geared toward stretching and strengthening the muscles; balance retraining; and functional performance, such as walking and carrying out activities of daily living. The use of splints, static and dynamic, can help preserve range of motion and reduce joint contractures. Serial casting may be necessary to further stretch and lengthen muscle fibers, which in turn promotes better range of motion. Finally, nutrition and supplementation, including placement of adjunctive therapies like gastrostomy feeding tubes, as needed, also play a role in preventing a catabolic state with associated muscle loss and helping to rebuild mass.

The notion that rehabilitation therapy is not a priority and does not need to be initiated until later in the patient's care plan is an antiquated one. Instead, the prevailing belief, supported by both clinical and research evidence, is that activity should be implemented as early on as possible to maximize recovery and well-being.



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Food for thought: The role of dietitians in rehabilitation

> Q & A WITH EUN KWANG BYUN, M.D., AND APINDER GREWAL, M.S., R.D.

BECAUSE PROPER NUTRITION is critical to successful rehabilitation, each of the Kessler inpatient campuses is staffed by registered dietitians who work in concert with the rehabilitation team. *Focus on Rehabilitation* spoke with Eun Kwang Byun, M.D., staff physiatrist at Kessler Institute for Rehabilitation, Saddle Brook campus, and Apinder Grewal, M.S., R.D., senior registered dietitian at Kessler, West Orange campus, to explore how dietitians collaborate with the treating physician and the rest of the rehabilitation team to promote patients' overall health, well-being and recovery.

Focus on Rehabilitation: How does nutrition affect rehabilitation?

Eun Kwang Byun, M.D.: According to published statistics, approximately 40 to 50 percent of inpatients are at risk of malnutrition and 12 percent are severely malnourished. Impaired nutrition can cause reduced skeletal muscle mass and function, delay cognitive recovery, decrease wound healing and increase the risk of pressure ulcers and infection. Poor nutrition status also debilitates patients and diminishes their ability to participate fully in intensive rehabilitation therapy.

Apinder Grewal, M.S., R.D.: Physical and occupational therapy go hand-in-hand with nutritional therapy. Adequate nutrition plays a major role not only in the healing and general well-being of all patients but also in their full participation in therapeutic exercises and relearning activities of daily living.

Focus: What are the responsibilities of dietitians at Kessler?

Grewal: Dietitians perform an initial screen of every patient within 24 hours of admission to Kessler, per The Joint Commission's requirements. This preliminary screen is a small part of our job;



our main focus is to perform full nutrition assessments one-on-one to determine the patient's nutritional risk and recommend interventions to the treating physicians on how to address identified needs. We also educate patients about their diet and make sure that they have all the nutrition information they need prior to discharge. We provide counseling and encouragement for patients and their families to facilitate necessary lifestyle changes that would promote rehabilitation goals and overall health. We check on the results of laboratory analyses to look for possible diet and drug interactions.

Focus: As the treating physician, how do you decide whether you need a nutrition consultation?

Byun: The first thing I consider is the patient's history, including any changes in dietary intake and weight, gastrointestinal (GI) symptoms and functional capacity. I also evaluate the impact of the disease state in relation

to nutritional requirements. Second, during the physical examination I look for loss of subcutaneous fat, muscle wasting, edema or ascites. Third, I consider weight indicators such as if the patient has weight loss greater than 10 percent within six months or greater than 5 percent within one month, if the patient is at greater than 20 percent of his or her ideal body weight, or if the body mass index is less than 18. Finally, I look for signs of visceral protein depletion in the lab results from the complete metabolic panel. Examples of these signs include serum albumin less than 3.5 g/dL, serum transferrin less than 200 mg/dL, serum cholesterol less than 160 mg/dL, serum prealbumin less than 15 mg/mL, or creatinine height index less than 75 percent.

Other "red flag" indicators of inadequate nutrition intake are a history of ingesting nothing by mouth for three days; clear liquid diet for more than five days; malabsorptive disorder; bowel obstruction disorder; impaired ability to digest; increased metabolic

requirements due to infection, burn or other causes; and GI disturbances, including nausea, vomiting, diarrhea and constipation.

In addition, nurses, therapists and aides, who all work closely with patients, often detect and report nutrition issues.

Focus: What is involved in a nutrition assessment?

Byun: The first step is taking a history with the individual or family. This includes identifying the patient's food, cultural, religious and meal preferences along with eating habits and physical activity level, and noting any issues with feeding prior to the incipient event that led to hospitalization. The second is the collection of the following types of objective data through the medical record: height, weight, laboratory values, medications (some can decrease appetite or affect taste or smell), medical condition and rehabilitation goals. Then, we analyze the objective data to determine nutritional status, needs, appropriate diet, need for snacks or supplements, and timing of aggressive nutritional support. When we set up a nutritional plan we consider three things: energy needs (protein), calories and fluids. The menu offers different equivalence or exchange options to meet all three components.

Grewal: After the nutrition assessment is completed, we place the patient in three risk groups: low, medium or high. High-risk patients have very complex injuries or are otherwise not eating well. Low-risk patients are eating well on a regular diet with no restrictions, and they are actively engaged in their rehabilitation therapy. How often we see every individual depends on each case. For example, if they are doing well, perhaps they are monitored every other day or weekly. The dietitian sees all the patients at Kessler.

Focus: How do dietitians integrate nutrition into the rehabilitation plan?

Grewal: After we assess each patient, we make recommendations to the physicians. We also collaborate closely with the nursing staff because of their high degree of awareness of patient needs. If a patient is unable to communicate, we ask the nurses and family members about the person's eating habits. The nursing staff will also call us to get our recommendations for those who are not eating well. Our Food and Nutrition team is committed to providing patients with a dining experience that best meets their nutritional needs and promotes their health and well-being during their rehabilitation stay.

Depending on individual requirements and preferences, a registered dietitian helps prepare an appropriate meal plan. Three meals a day are provided based on a patient's diet order, with snacks served per request or as needed. We also offer a menu with entrees certified to be in keeping with Kosher or Halal diets. If patients are unable to eat, alternative nutrition support via enteral or parenteral nutrition is provided.

Furthermore, if individuals have nutritional deficits, our dietitians work closely with those patients and the rehabilitation team to respond to any issues. For example, speech pathologists will introduce techniques and strategies to help individuals who have swallowing difficulties. The bottom line is we do everything we can to make our patients' rehabilitation experience as successful and positive as possible.

Focus: How do dietitians and the medical and clinical leadership communicate?

Grewal: We communicate regularly through various channels and participate in weekly interdisciplinary team conferences that include representatives from medical, nursing, physical therapy,

occupational therapy, speech therapy, case management and psychology. Physicians and other team members will also email or stop by to discuss specific cases or concerns with our dietary staff.

Focus: What fosters interdisciplinary collaboration within the rehabilitation teams?

Grewal: The workplace culture at Kessler supports our ability to establish a strong working relationship with our colleagues. Sharing our individual areas of expertise and a variety of perspectives helps us to best manage our patients' needs and resolve any concerns. We have a common goal to provide individuals with the quality care they expect.

Byun: In some other hospitals, the nutritionists assess patients, consult with the nursing staff and place orders independently of the physicians. At Kessler, physicians write up the orders based on the dietitian's recommendations. This is a better system because it promotes communication among the various members of the team and contributes to better patient outcomes.



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Regulation in health care: A curse or a blessing?

> BY BRUCE M. GANS, M.D.

THE IMPLEMENTATION of the Affordable Care Act and other health care reform initiatives is bringing an unprecedented slew of new regulations and policies to our industry. These include value-based purchasing and bundled payments, increased quality reporting requirements, reimbursement reductions and possible readmission penalties.

We can get frustrated at the additional administrative burdens or we can accept them with a greater understanding as to why regulations exist and, in the process, we will become involved in their formation.

Why Do Regulations Exist?

- To create standards of minimum performance for which all entities are accountable
- To reduce the risk of abuse and fraud
- To improve quality
- To control expenses
- To protect patients

Often, these goals overlap. For instance, some Medicare regulations, which are designed ostensibly to preserve quality, are also used to constrain expenditures. Standards of minimum performance ensure a baseline playing field for providers and also protect patients.

From a provider point of view, regulations can safeguard us, as well. For instance, the certificate of need laws that many states have may prevent an oversupply of competing facilities that could lead to potential overutilization.

Other protective regulations include corporate practice of medicine laws in some states that prohibit hospitals from employing physicians under the theory that the employer could potentially exert undue influence over the physician-patient relationship. Professional licensure laws are a strong regulatory tool to protect professional interests by

preventing individuals without the necessary qualifications from providing the same services.

Understanding the Process

It is important to understand how regulations are developed. In general, there are six steps:

1. Someone perceives a problem or an opportunity for new rules.
2. Constituencies on both sides coalesce around the issue and lobby decision makers.
3. The legislative or administrative body issues draft language to establish a new policy.
4. Constituencies align themselves around the proposal to advocate for or against it.
5. The policy passes and final rules are published.
6. Constituencies continue advocating for or against changes to the policy.

This highlights the importance of participating in rule-making to ensure it is fair, applicable and implementable. Few

on them (with input from members), create and participate in coalitions, advocate in their members' interests and, once a proposal is enacted, inform and educate. If a final rule is detrimental to members, the associations may continue to fight for change.

Although the politics, bureaucracy, infighting and sometimes harsh rhetoric (like that around the Affordable Care Act) may make policy development about as appetizing as a tax audit, it is really a marvelous process thanks to our democratic system.

Unlike in many other countries, policymaking in the United States is an open process that allows for input from multiple constituencies. It is also flexible; it's a rare regulation or policy proposal that doesn't get tweaked thanks to advocacy.

It should be apparent that the legislative and regulatory process affects us all. So it is in the self-interest of each individual and organization to support professional societies

We can get frustrated at the additional administrative burdens or we can accept them with a greater understanding as to why regulations exist and, in the process, we will become involved in their formation.

individuals have the time to do all this on their own, of course. That's where professional organizations and associations come in, such as the American Medical Rehabilitation Providers Association, the American Academy of Physical Medicine and Rehabilitation, and the Association of Academic Physiatrists.

These associations monitor legal and regulatory proposals, develop positions

and associations so they can provide the oversight and input needed to ensure fairness.

While no single person can do this, each individual can participate by volunteering and maintaining membership (paying dues). Expertise, time and money are the basic ingredients for successful advocacy for our field and professions.

Technology transforms the residence—and the resident

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Endless Options

For people with severe spinal cord injuries, even the most seemingly mundane tasks, like adjusting the thermostat or answering the door, present significant challenges. The impact of these limitations is significant: When patients cannot improve their independence or daily functioning, other important outcomes like mood, quality of life, socialization, self-esteem, occupational functioning and interpersonal relationships also appear to suffer.

Automation technologies facilitate more independent daily living through an incredibly wide variety of functionality in the home. Electronic systems can be wired to operate nearly anything, including doors; blinds and curtains; alarm systems and door locks; television, cable and stereo equipment; telephones; light switches and lamps; ceiling fans and thermostats; and more. Individuals with limited range of motion, fine motor dysfunctions or upper extremity mobility difficulties can operate these by using a tablet (touch screen), Bluetooth technology, a smartphone, a plug-and-play device, a personal computer or voice recognition.

For example, there are plug-in devices that use a mobile application to turn on electrical items like fans, heaters, lights and even coffeemakers remotely. A patient can operate a smartphone or tablet with a modified, larger stylus or a mouth stick. Many smartphones can be programmed to make calls, text and play music through voice command.

All these features give patients more control over their environment and allow them to live more autonomously. For instance, changing the channel on the television without assistance can help restore feelings of self-worth and

dignity. And although automation technology is relatively new to rehabilitation, early research bears out the potential promise of such innovations, indicating that these devices can help

catheterize or take medications.

In addition to cellphone use, the therapy team assesses how a personal computer may enhance independence and functioning for a given patient.

Automation technologies facilitate more independent daily living through an incredibly wide variety of functionality in the home.

significantly improve the quality of life and functioning of individuals with especially severe spinal cord injuries.¹

Incorporating into Care

At Kessler Institute for Rehabilitation, integration of automation tools into patient care has targeted primarily individuals with tetraplegic spinal cord injuries. It typically starts with encouraging the regular use of cellphones during inpatient hospitalization, which serves the dual purpose of helping people maintain their support system and, for older populations who generally have less experience with mobile technology, increasing familiarity and comfort with the devices. The therapy team assists with adjusting settings, such as voice dial features, on the phones to make communication and use easier. Team members also help identify and download mobile applications specific to the individual's needs or interests. For example, free applications provide maps and ratings on wheelchair accessibility of public areas in the user's location, like restaurants and theaters, and others have daily alarms reminding patients when to

Younger individuals especially are encouraged to continue any previous use of social media platforms, such as Facebook and Twitter, to ensure interpersonal relationships and communication remain open.

Finally, the degree to which automation technology then can be integrated into a patient's home after discharge is based on the physicality and structure of the residence, personal daily living needs and financial considerations. Although the cost of fully automating one's house is high, numerous options are available that are less expensive, such as wireless technology to open the front door. Such changes may seem small but nonetheless contribute to improving daily life.

Patient Satisfaction

Anecdotal feedback continues to be positive. Generally, people become enthusiastic about any tool that will help increase their independence. For individuals who regularly used smartphones and computers prior to injury, reintegration of these technologies into their lives provides a sense of returning to normalcy. And because of the ubiquity of the Internet, many patients have taken advantage of online resources to return to school or work. This, too, provides support for reestablishing a daily routine and advancing long-term recovery.

¹ Rigby P, Ryan SE, Campbell KA. Electronic aids to daily living and quality of life for persons with tetraplegia. *Disabil Rehabil Assist Technol.* 2011;6(3):260-7. doi:10.3109/17483107.2010.522678. Epub 2010 Oct 1.



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