

Rehab Perspectives Spring 2009

INNOVATION: Creating New Dynamics in Therapy

- Partnering in Technology Development
- Adapting Technology for Geriatrics
- Delivering Evidence-Based Practice



Contents

Innovative Thinking and New Technology

Technology. It's a constant wind that sweeps over us with stunning force, changing our world with the click of a button or the flick of a finger. Computers that streamline paperwork and store records are old hat. Today, even kids in elementary school communicate using palm-held devices with touchable screens that access calendars and contacts and deliver speech, text, music, videos, photos and access to the Internet.



But although the current generation is hot-wired into 21st century technology, the needs and interests of the elderly are often ignored. Here at Aegis, we believe that innovation and technology are essential to ensure that our patients reach their best outcomes. We're never satisfied with the status quo—we constantly pursue innovative thinking through research, partnerships, pilot programs, training and other means in order to add value to our services.

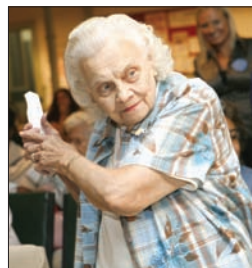
In this issue of *Rehab Perspectives*, we'll show you an example of how our partnership with manufacturers of cutting edge technology has enhanced the development of the electromodalities that are part of our Geriatric Enhanced Modalities (GEM) program. We'll explore how patients in our pilot programs in nursing homes are reaping the rewards of therapy that includes interactive technology. And we'll provide insight into why every therapy company should make a commitment to support clinical treatment with research and evidence-based practice.

Grandparents can have just as much fun and benefit from technology as their plugged-in children and grandchildren. Nursing homes are beginning to recognize that residents and their families want and will choose facilities that integrate the newest technology in the delivery of therapy treatment.

Technology holds a promise for improving the lives of all of us—we must include it in the treatment of the geriatric population.

As ever, Aegis is proud to be your rehab resource.

Martha Schram
President
Aegis Therapies



- 3** Innovative Partnerships
Improving technology through collaboration
- 4** Are Your Patients Having Fun Yet?
Let technology give your therapy a boost
- 6** The Three-legged Stool of Treatment
Applying evidence-based practice

Rehab Perspectives

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Innovative Partnerships

Improving technology through collaboration

Two heads are better than one, as the old saying goes. And in the case of technology, that is particularly true. On one hand, you have the developers of technology who think up all the fancy stuff that makes the whiz-bang gizmos work. On the other hand, you have the users of technology who have specific ideas about how they want their gizmos to function.

So when technology developers and users put their heads together to form a collaborative partnership, it's pretty certain that the resulting gizmos are going to have an impressive whiz-bang factor.

Take the case of the partnership between Aegis Therapies and Senior Solutions, a subsidiary of Chattanooga Group, which is owned by Encore Medical Corporation. Diathermy, electrical stimulation and ultrasound machines are key components of Aegis' Geriatric Enhanced Modalities (GEM) program. Chattanooga wanted to improve the modalities that were available in the marketplace and Aegis wanted equipment that was efficient and reflected its therapists' clinical knowledge. It made sense to work together.

"The developer usually has more research and development dollars available to pursue innovative ideas," says Mark Besch, vice president of clinical services for Aegis Therapies.

Giving the customer a voice

When the two companies began to partner nearly four years ago, big things started to happen.

For example, Chattanooga worked with 10 Aegis facilities in three states to get feedback on its electrical stimulation machine.

"Aegis allowed us to come into their facilities to observe and interview not only their clinicians but their patients," says Ed Dunlay, vice president of product development for Chattanooga Group. "The therapists told us how long the lead wires for the machine should be, how aggressive the gel should be, and how the package should be designed. Patient feedback helped us make important changes, such as formulating electrodes to minimize skin irritation. We would not have had a clue about the problems had we not been receiving the clinical feedback."

In the case of its new diathermy machine, Chattanooga created a mock up of the software, much like a video game, and allowed therapists at multiple Aegis sites to test it. "The therapists helped us make the screen more efficient by showing us how it should be laid out and by eliminating excess key strokes," says Stephen Schuster, Chattanooga Group's education coordinator for product and sales. "We changed the flow of the software and included



Residents get better care when technology developers work with end users.

some presets that could be used with just one button."

Aegis, too, is pleased with the partnership. "Collaborating on development has been great for us because it has given us access to the latest and greatest technology," says Besch. "By participating in the design phase, we have been able to include tested clinical protocols that are exclusive to Aegis and that we have found to be the most effective."

The Aegis-Chattanooga collaboration on Chattanooga's new electrotherapy machines has eliminated all of those "I-wish-it-did-this" or "why-doesn't-it-do-that?" moments that users often experience when presented with a finished product. "By collaborating, we end up with a better product than what is commercially available," Besch says.

Electromodalities aren't the only area in which Aegis is partnering with manufacturers. The company is adapting its Freedom Through Functionality exercise program for home use and has partnered with Med-Fit Systems to research and adjust exercise equipment that is currently being tested with Aegis therapists. Further possibilities for partnership include back-of-the-house support, such as staff training and CEU credits. "We're continually looking for synergistic opportunities," notes Matt Braswell, executive vice president of Med-Fit Systems. "Our partnership allows Aegis to extend its services into different research areas without incurring cost or devoting manpower that it otherwise would have to. It's a win for everyone." ■



Are Your Patients Having Fun Yet?

Let technology give your therapy a boost



Nintendo's Wii game system has been a "home run" with therapists, who say it has gotten more patients more active by simulating sporting activities.

Eighty-two-year-old Millie didn't like going to therapy. Facing a blank wall while performing stretching and reaching exercises that pushed her beyond her comfort zone was no fun. When it was time for a session, she complained—she really wanted to stay in her room.

Fortunately, Millie's therapists had a few tricks up their sleeves. The next time Millie went to therapy, her therapist asked her if she'd like to forget her regular exercises and try a little bowling instead. Millie's face lit up. Soon she was standing in front of a Nintendo Wii video game system, physically going through the motions of knocking down tenpins while using a wireless controller to simulate the action on the screen. Millie's therapists corrected her trunk rotation and weight shift as she moved to "roll" the ball down the lane. At her next therapy session, Millie was

eager. "Let's bowl!" she said.

Millie's story is not unusual. Interactive technology such as Wii is changing the way therapy is being delivered. Once regarded simply as entertainment, interactive physical and mental games have proven to be valuable therapy tools. With the Wii system, patients play sports, such as tennis, bowling, golf, baseball and target shooting, which require specific body movements to control the player on the screen. Therapists then cue patients and monitor movement just as they do in traditional therapy.

"Interactive technology doesn't replace therapists; it helps therapists do what they do to a higher degree," says Donna Diedrich, PT, GCS, regional clinical director for Aegis Therapies. "The interactive technology engages patients in the 'game' and distracts them from the actual therapy."

Diedrich cites the example of bowling. "While patients are concentrating on knocking down the pins, therapists are working with them on arm swing, motor planning and stance," she says. "Often, patients are having so much fun that they don't even realize they are getting excellent practice on the components of a healthy gait pattern or whatever their therapy regimen is."

System hits the bull's-eye

That is certainly the case at Christian City Convalescent Center in Union City, GA, one of several facilities where Aegis is piloting Wii therapy. Jana Rodgers, MA, CC-SLP, clinical specialist for Aegis Therapies, tells of a resident who had always enjoyed target shooting on her farm and missed it in the nursing home. Her therapists augmented her therapy with a Wii target-shooting game, tapping into her skills. "The woman was able to focus her mind on an activity she enjoyed while working on her dynamic balance and upper extremity active range of motion," says Rodgers.

Rodgers notes that patients who have previously refused therapy, or have not performed at their best during therapy sessions, often can be brought to a new level of function using the interactive Wii. "We find that people put more effort into therapy because it just becomes fun."

Although the Wii system is common in activities programs, it is used differently as a therapy tool. "It's a question of setting goals," says Rodgers. "If Mr. Smith is in a wheelchair, the activities director probably wouldn't have him stand up to play the bowling game, whereas the therapist's goal would be to have him stand safely and independently. She would provide support and help Mr. Smith improve his balance as he moved his arm to throw the ball."



Computers designed for geriatrics

While Wii is a consumer product available off the shelf, other new interactive technology is specifically adapted for the geriatric population. For example, "It's Never 2 Late" is a software and hardware program designed to make the computer more easily accessible for both the physically and cognitively impaired. Adaptive computer equipment and a variety of hardware devices adjust for wheelchair height or standing, and the software is designed so that even those without computer skills can easily navigate through programs and connect to the Internet.

"Our picture-based touch-screen software opens directly to content that's designed to engage older adults and makes accessing it less intimidating than with a standard computer," says Jack York, founder and CEO of It's Never 2 Late. "Content is varied to meet a range of interests. For example, one touch on the screen can open music from different eras, classic radio programs and clips from vintage TV shows. Patients can experience virtual travel, research history or play word games and puzzles. Virtual bike rides, and flight and driving simulators provide scenic rides onscreen."

Unlike the Wii, which addresses gross motor movements and upper body strength, It's Never 2 Late is designed for visual and perceptual problems, cognitive issues, inattention, fine motor coordination and standing. Research has linked mental stimulation to the slowing of Alzheimer's disease, and the computer is an excellent source of such stimulation.

In the several buildings where Aegis is piloting It's Never 2 Late, it has been a rousing success. "We are moving away from traditional therapy and helping the geriatric population catch up with the technological world," says Emma Bhende, OTRL, rehab program coordinator for Aegis Therapies. "Most of our patients are computer shy, so we've trained our therapists not to mention the word 'computer,' but rather to show patients the It's Never 2 Late screen and say, 'Look at the TV and see what you think. We want your feedback, good or bad.' Once patients use the program, they love it and ask how soon they can come back. It makes them think of therapy as not pain related, but as fun."

And fun it is. At Golden Living Center Northside in Atlanta, Jana Rodgers tells of a gentleman who was highly resistant to the



It's Never 2 Late options make therapy more enjoyable for residents.

technology until she showed him how to access World War II video clips. Now he's thoroughly engaged. "Meanwhile," she observes, "he's getting good therapy by using his weaker side to reach across midline and activate the screen."

At Golden Living Center Kennestone in Marietta, GA, the Aegis Therapy Department placed two It's Never 2 Late monitors about four feet apart. Two gentlemen who didn't want to participate in traditional therapy now enjoy playing word games against each other while sitting in front of the touch screen monitors. "In therapy terms, they are working on reach and cognitive engagement," notes Rodgers.

It's Never 2 Late can even be customized for personal content. For example, a photograph of a grandchild's face can be turned into a puzzle on the screen. Personalized content motivates patients to participate, and while their minds are engaged, therapy tasks such as sequencing motor coordination engage their bodies.

Technology sells

Technology and an innovative approach to therapy can be a tremendous marketing tool for nursing facilities. "As tours come through the building, they are impressed that we have the Wii and the It's Never 2 Late systems," says Rodgers, "It's strong evidence that this is a cutting edge rehab center; it's not your grandmother's nursing home."

As the population ages, the use of technology in the therapy setting will become a necessity rather than a luxury. "The generation in our facilities today is not that tech savvy," notes Mark Besch, vice president of clinical services for Aegis Therapies. "But their families are choosing nursing homes for their loved ones based upon that kind of creative innovation. As the younger, wired boomers move into nursing homes, they, too, will expect technology to continue to be part of their lives. The next generation isn't going to be content doing a crossword puzzle in a workbook."

Technology and innovative treatment will become increasingly entwined with care of the elderly in the future as a lifestyle choice. "We are trying to effect a paradigm shift in perception that moves the nursing facility from the medical model of a nursing home to a place for living," says Aegis' Diedrich. "Technology can be both personally useful and entertaining, but it can also be used in the recovery process. Interactive technology is a motivational and psychological tool. You just can't negate fun." ■

Therapy Interventions using It's Never 2 Late

Occupational Therapy

- Activities of daily living
- Improving motor control, especially in the upper extremity
- Improving weakness, mobility and dexterity in the hands
- Safety issues
- Balance
- Problem solving

Physical Therapy

- Standing balance
- Coordination
- Proprioception (neuromuscular re-education)
- Range of Motion

Speech Therapy

- Cognition
- Aphasia
- Safety issues

(Source: It's Never 2 Late)



The Three-Legged Stool of Treatment

Applying evidence-based practice



When it comes to therapy, innovation is a marriage of clinical practice, experience and the best external-clinical trial evidence found in the literature.

When Mrs. Jones' stroke left her paralyzed on one side and without speech, her therapists prepared a care plan designed to restore her to as much function as possible. Historically Mrs. Jones' treatment would have been based upon tradition, clinical expertise, and trial and error. But Mrs. Jones' therapists weren't satisfied with the traditional way of doing things. They wanted the best possible outcome for Mrs. Jones, and that involved a little innovative thinking. They went straight to the clinical-trial literature.

We tend to think of innovation in terms of the newest and sexiest piece of technology. But sometimes innovation comes from applying new thinking to a traditional way of doing things. In terms of therapy, innovation is the marriage of clinical practice, experience, and the best external clinical-trial evidence found in the research literature. It's called evidence-based practice (EBP).

Evidence-based practice is a three-legged stool that represents treatment decision-making based upon a dynamic assembly of facts: one leg is the art of clinical practice based upon the therapist's knowledge and judgment; another is patient values; and the third is proven science, the research studies that report the efficacy of treatment and support optimal clinical care.

"Only after all relevant information has been considered from these three sources can we then make choices that provide the best opportunity for successful outcomes given the patient-care environment and available resources," says Lynn Freeman, clinical support for specialty programs for Aegis Therapies. "But too often, we, as therapists, acknowledge only clinical expertise, which often leads to inaccurate clinical problem solving, which can lead to ineffective delivery of care."

For example, Freeman notes that discharging patients without ensuring an appropriate level of functioning in terms of advanced activities of daily living (ADLs) and community reintegration can

Using Evidence-Based Practice

1. Formulate your clinical question.
2. Obtain the evidence through literature searches.
3. Evaluate the evidence for validity and applicability.
4. Combine this evidence with clinical experience and your individual patient's situation to determine the best course of action.
5. Examine your performance.



cause patients to fail and often results in their re-entry into the medical system. “In contrast, when we use EBP, which couples valid and reliable measures and interventions with research relative to optimal function, then we have more information to consistently achieve better rehab outcomes.”

Backing up clinical experience with solid science just plain makes sense. “As a therapy company, we are moving toward documenting the clinical efficacy of every treatment and protocol we give,” says Mark Besch, vice president of clinical services for Aegis Therapies. “That’s our goal. Our focus is EBP.”

The role of the therapy company

Therapists may be nodding their heads in agreement over the wisdom of EBP but shaking their heads about how to practice it, given the time strictures of clinical practice. For a therapist to search the literature every time a decision is required would be an onerous burden. That’s why it’s crucial for a therapy company to act as a research clearing house, providing resources and disseminating evidence-based information to its therapists in the field. “Aegis culls research from a variety of sources,” says Donna Diedrich, PT, GCS, regional clinical director for Aegis Therapies. “We incorporate the use of research literature in our core program training and when we introduce a procedure using new technology.”

Strength training is an excellent example of how clinical studies have validated clinical practice. Aegis’ Freedom Through Functionality program focuses on resistance training with a variety of exercise equipment adapted specifically for seniors. “For this strengthening program, we use the research evidence that shows us the best protocols to use for our geriatric population,” says Diedrich.

Strong evidence

A study at John Knox Village in Orange City, FL, reported that residents who pumped iron for 10 minutes twice a week for 14 weeks added four pounds of muscle, increased their leg strength by 80% and their upper body strength by 40%. That study guided therapists in choosing procedures and treatment duration for their patients in other nursing facilities.

Similarly, a study on the “Effects of Repetitive Shortwave Diathermy for Reducing Synovitis in Patients with Knee Osteoarthritis” reported in the February 2006 issue of *Physical Therapy*, found that “shortwave diathermy therapy successfully decreases synovial sac thickness ... and can control synovial inflammation. The results demonstrated that, with more treatment sessions, there was a further reduction in synovial sac thickness and knee pain.” Again, research guided therapists in making decisions on specific interventions that they otherwise may not have chosen.

By making such studies available to therapists in the field, a therapy company itself is able to dramatically influence patient outcomes. “At Aegis, our education is a continuum that is always changing,” says Diedrich. “We stay current with the latest science.”

Research isn’t only applicable to patient treatment; it can be valuable in discovering optimal training procedures for therapy staff. “We used a 1998 classic systematic review published in the *British Medical Journal* to guide the research and development of our clinical education programs,” says Aegis’ Freeman. The review, titled “Closing the gap between research and practice,” found that the most effective way to help staff achieve behavior change in practice habits was to offer clinical support services that are multifaceted rather than more passive training venues, such as seminars.

As a result, Aegis’ Clinical Services Department developed flexible training programs that include multiple components. An

example is training for its continence-improvement program.

“We offer on-site consultation and training provided by clinical support personnel, seminars, and in-services for rehab and other professionals at the center,” says Freeman. “We also provide refresher training modules, reminders in the form of one-page clinical documents, an e-learning course, and manuals that are available on-site and online. This evidence-based approach allows us to support our teams in the most efficient and effective way possible. Why wouldn’t we want to use that information to improve our education?”

In addition, the company might synthesize research findings into a quarterly clinical tip or literature review, train the field by way of national conference calls, or upload the information to its SharePoint digital library.

However, as impressive as studies might look, Diedrich warns that the printed word cannot always be taken at face value. “Aegis carries out behind-the-scenes reviews of the research we want to use to make sure that the information and results being presented have validity and are realistic for our population,” she notes. And she cautions that simply reading the abstract of a study is not sufficient to learn all the pertinent information.

Another resource for therapists is, of course, the Internet. But as everyone who has ever “Googled” a subject knows, trolling the Web for answers can eat up large chunks of time. A therapy company that is committed to EBP should make pertinent and current science easily available. For example, professional associations play an important role in keeping therapists aware of what studies and clinical best practices are being published. In the last quarter of last year, the American Physical Therapy Association (APTA) published studies on diabetes and exercise and the influence therapists can have in prevention and management for diabetic patients in terms of exercise, nutrition, and well-being.

“There were many, many articles, so we made those links available to our therapists,” says Diedrich. “What gives Aegis the cutting edge as a company is that we reimburse our therapists to varying degrees for their professional organization memberships. Because of that, we have access to a lot of research that is exclusively available for members of those professional organizations.”

There is no substitute for clinical expertise, but innovative decision-making calls for more than reliance on experience and trial and error. The days of basing treatment solely on a clinician’s judgment have ended. There is data to prove which treatments are effective and which are not. Evidence-based practice requires that such information be integrated into clinical practice. It’s this kind of innovative thinking that leads to the best patient outcomes. ■

Elements of Critical Inquiry to Validate Research Literature

Six Questions to Ask

1. Is the purpose of the study derived from an adequate review of the literature?
2. Was the sampling strategy appropriate to address research questions?
3. Was the research design appropriate for addressing the research questions?
4. Were data-collection procedures designed to limit bias?
5. Were the statistical tests that were used appropriate given the study design and type of data?
6. Were the conclusions appropriate given the study’s findings?



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