

The Madonna Minute

A briefing about the programs and innovations at Madonna Rehabilitation Hospital

December 2007

The Institute for Rehabilitation Science and Engineering

Leading the way in research and development at Madonna Rehabilitation Hospital

Since its founding in 2001, the Institute for Rehabilitation and Science and Engineering at Madonna Rehabilitation Hospital has earned national and international recognition for leading-edge research and development. Researchers and clinicians collaborate on new projects and work with patients to create innovative strategies for rehabilitation. Ultimately, the goal is to help people achieve their best possible outcomes and get back to their lives.

The Institute has three Centers of Excellence. The Movement Sciences Center of Excellence is dedicated to enhancing the independence and quality of life of persons with and without disabilities through research, education, and clinical services. The Center includes a state-of-the-art laboratory for examining and analyzing normal and dysfunctional walking and movement. In 2007, the Movement Sciences Center was awarded a federal grant for nearly \$600,000 through the National Institute on Disability and Rehabilitation Research to develop an innovative exercise device and control system, called ICARE. The ICARE system will help patients recovering from a brain injury, stroke, hip fracture or joint replacement improve their walking ability and physical fitness while at Madonna, as well as when they transition back to their home communities.

“Madonna’s patients came from

29 different states last year,” said Dr. Judith Burnfield, Ph.D., P.T., Director of the Institute and principal investigator on the grant. “What our patients really need is not only state-of-the-art technology while at Madonna, but also affordable, cutting-edge equipment for use when they return to their home communities. The new

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technology that we are developing in collaboration with our colleagues from the University of Nebraska-Lincoln (UNL) and Creighton University will meet that need and improve rehabilitative care around the country.”

The Communication Center of Excellence focuses on collaborative research related to assistive technology, augmentative and alternative communication, telehealth, and motor speech disorders. Susan Fager, MS, CCC-SLP, lead researcher in the Communications Center of Excellence, has partnered with colleagues from

UNL and the communication industry to refine and implement new technological approaches. Innovations are enabling clients with only minimal movement and speech ability to control their environment and communicate with those they love.

The Clinical Informatics Center of Excellence develops innovative methods for organizing and interpreting the expansive quantities of data contained within clients’ medical records. It is expected that these new approaches will further enhance treatment approaches by enabling more rapid integration of evidenced-based practice into the art and science of clinical decision-making. Dr. Bill Shuart, director of the Clinical Informatics Center, is currently collaborating with colleagues from UNL on a grant funded through the National Institutes of Health titled, Building Translational Research in Behavior Science. This work extends a well-established history between Dr. Shuart and Dr. William Spaulding, the study’s principal investigator.

Collectively, the Institute’s researchers are advancing clinical innovation through research and development activities, a goal which is an essential component of Madonna’s long-term strategic plan. Researchers are involved in seven federally funded grants and seven externally funded foundation efforts that will help establish new standards across the

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country for care provided to patients recovering from conditions, including brain injuries, strokes, and spinal cord injuries. The team currently has six manuscripts in press in peer-reviewed journals, four book chapters and a book in progress. Their research has been presented nationally and internationally over the last year, including Germany, Switzerland, and Canada.

Research in action: Sami Palumbo's story

Samantha Palumbo's parents, Sam and Diana, were scanning the country for top experts in rehabilitation, looking for new research to help their daughter. Their search led them to Madonna. "We heard from more than

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one specialist, ‘if you want the most advanced rehabilitation research and technology, you have to go to Madonna,’” Diana said.

Samantha “Sami” Palumbo, a teenager and top student from San Dimas, Calif., was eager to get her life going. But her fast track to success took a bad turn on a spring evening in 2005, when Sami's car veered off the road and clipped a log fence. The logs speared through the car's windshield, smashing the left side of Sami's head. She lay in a coma while her family and friends prayed and hoped for the best. After several weeks, Sami surprised her medical team by regaining consciousness and slowly

Now you can.



Samantha Palumbo with Susan Fager, MS, CCC-SLP, lead researcher and assistive technology coordinator at Madonna Rehabilitation Hospital.

made progress in mobility and understanding communication.

Sami came to Madonna for diagnostic testing and therapy. She was assessed by Susan Fager and Dr. Judith Burnfield of Madonna's Research Institute.

“The knowledge we've gained has been so comforting,” said Diana.

“We are on the right track with Sami's

rehabilitation plan and have discovered new adaptive technology devices and exercises that will help her even more. I can see now why Madonna is so respected for rehab and research.”

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