**Disorders of Consciousness Program**

**Level I**—focuses on individuals who have not yet recovered consciousness

**Level II**—focuses on those who have recovered consciousness but are unable to communicate reliably

**Level III**—focuses on individuals who can communicate but remain confused and require assistance for self-care activities

**Program Objectives:**

- Determine level of consciousness using evidence-based assessment protocols
- Identify physical and cognitive barriers preventing effective communication and environmental control
- Establish prognosis and monitor rate of recovery
- Delineate long-term care needs
- Implement data-driven treatment protocols
- Prevent secondary complications (e.g., contractures, skin breakdown, infection)
- Maximize arousal, alertness and response consistency through the use of medications and assistive technologies to promote recovery of communication
- Maximize capacity to independently perform self-care activities
- Provide education, support and informational resources for patients, family and caretakers
- Provide opportunities for participation in cutting-edge research on novel evaluation and treatment techniques that may not yet be available in clinical settings

The Spaulding Rehabilitation Network Disorders of Consciousness Program provides a continuum of care specifically designed for individuals with severe acquired brain injury who have yet to regain the ability to follow instructions, communicate reliably or perform basic self-care activities. Increasing evidence from carefully designed research studies indicates that individuals with DOC recover over a longer period of time than previously thought, and many regain the ability to function independently. For those who survive severe brain injury, there is a marked variability in medical, cognitive and physical needs. Spaulding provides a specialized 8-week rehabilitation program for individuals with DOC to help ensure that treatment services are appropriately matched to the current level of function and immediate care needs. The overarching objective of the program is to optimize functional recovery through the application of evidence-based assessment and treatment protocols.

Specialized neuromonitoring and clinical intervention programs are located at Spaulding Rehabilitation Hospital Boston (SRH) and Spaulding Hospital Cambridge (SHC). SHC provides specialized rehabilitation services for patients who continue to require complex medical management. Assessment strategies and rehabilitation goals are developed and modified based on systematic, standardized protocols implemented throughout the course of the program. Progress is monitored weekly using validated outcome measures that address cognitive, linguistic, physical and functional status. A comprehensive, data-based Patient Profile is generated for all program participants that charts progress toward treatment goals and guides clinical decision-making. Continuation of care following discharge is available through our preferred-provider relationship with selected skilled nursing facilities.
**Neurorehabilitation Team**

Family members are integral to the plan, assisting in the development of rehabilitation goals and implementation of treatment interventions. Patients admitted to our DOC Program are evaluated and treated by an interdisciplinary team composed of specialists in the following disciplines: psychiatry, internal medicine, neurology, pulmonology, infectious disease, neurotrauma outreach, on-site medical consultation services are available through neurology, physical medicine and rehabilitation, and occasional consultation by behavioral psychology, speech-language pathology, physical therapy, occupational therapy, recreational therapy, social work, case management and discharge planning, and occasionally seemed to follow simple commands. was he really moving. He occasionally appeared restless. He began to look at and follow instructions? The rehabilitation team developed and administered special test procedures to distinguish voluntary behavior from random movements. Shortly afterward, Dylan started on stimulant medications and other rehabilitation therapies to improve alertness and behavioral responsiveness. The rehabilitation team continued monitoring his behavior, comparing his week-to-week performance on specific measures.

**Dylan Rizzo’s Story**

“Dylan,” a 20-year-old college student, suffered a traumatic brain injury with loss of consciousness after he was involved in a motor vehicle accident. He developed a large intracranial hemorrhage and life-threatening swelling requiring urgent neurosurgical intervention to remove the blood and swelling from the brain. Following surgery, he remained in a coma, unable to open his eyes, respond to commands or communicate. Over the next two weeks, while still in intensive care, Dylan opened his eyes, emerging into a vegetative state where an individual is awake but remains unconscious—where the “vegetative” functions of the body (e.g., breathing, heart rate) recover before consciousness returns. It was clear Dylan’s traumatic brain injury likely resulting in long-lasting changes in mental and physical abilities. He would need intensive rehabilitation therapy and care.

Six weeks after the accident, Dylan had become medically stable allowing the Spaulding Rehabilitation Network Disorders of Consciousness Program. while he was still unconscious, an interdisciplinary neurorehabilitation team began evaluating his level of alertness, movements and other behaviors using specialized procedures designed to detect subtle signs of consciousness. The results of the initial evaluation provided a “baseline” for monitoring speed of recovery and the effects of planned treatments. Sedating medications were discontinued and rehabilitation therapies were initiated to increase alertness and sensory awareness.

Over the next few weeks, Dylan showed slow, steady gains signaling a return to more conscious states. He could now conduct more sophisticated evaluations of his mental abilities to questions concerning his needs and preferences. The rehabilitation team could now conduct more sophisticated evaluations of his mental abilities (e.g. attention, memory). Dylan’s reliable answers indicated that he was no longer minimally conscious, paving the way for additional medication trials and more advanced training regimens to improve his cognitive and motor abilities.

Throughout the rehabilitation process, the treatment team maintained close communication with Dylan’s family. Formal family meetings were held to discuss progress and proposed changes in the rehab program— resources and preferences. She then communicated with key personnel about the discharge location selected (e.g. home, sub-acute rehabilitation program, skilled nursing facility) to facilitate a fluid transition. Following Dylan’s discharge, DOC Program staff scheduled follow-up contacts with his family to continually monitor his recovery and remain available for consultation as needed.

**Spaulding Strengths**

The Spaulding Center for Biomedical Imaging.

Ona wu, Athinoula A Martinos Center for Biomedical Imaging.

Courtesy of Brian Edlow and Dina Bk, Athinoula A Martinos Center for Biomedical Imaging.