NRI
Outcome Validation Study Highlights for 2020

Demographics and Characteristics

The NRI Outcome Study for the period ending December 31, 2020, addressed the discharges of seven individuals. There were 6 males and 1 female with ages at discharge ranging from 30 to 66 years. The average length of stay (LOS) on the NRI program was 380 days with a range of 90 days to 797 days. Individual lengths of stay, in days were: 90, 151, 166, 373, 496, 584, and 798.

Mechanism of Injury

The etiology of the brain injuries for the discharge population in this study includes motor vehicle accidents, anoxia, physical assault, and encephalopathy and infection secondary to HIV. Patients sustained moderate to severe injuries resulting in significant physical, medical, cognitive, and behavioral deficits. Many showed post-injury history of aggressive behavior including aggression toward self and others, elopement, non-compliance, and impaired impulse control. Patients had a range of cognitive problems involving attention, planning, organization, problem solving, and auditory, verbal and visual memory.

Outcome Measures

The NRI outcome study continues to include objective outcome measures including the Mayo-Portland Adaptability Inventory (MPAI-4) developed by Malec and Lezak (2003). To expand the utility of the MPAI-4 data we also analyze the tool's subscales. In addition to objective measures NRI collect the following categorical measures for Return to Independence, Social Role Return, Vocational Re-entry and Self-Management. Following is the NRI Outcome Validation Study for 2020.

Objective Measures Outcomes 2020

	Mayo-Portland Adaptability Inventory - 4				
	Ability	**Adjustment**	**Participation**	**Total**	**(N =)**
Admission	50	62	57	58	**7**
Discharge	44	49	50	47	**7**
Change	6	13	7	11	

- **MPAI-4 Scores report as t-scores (Mean=50; Standard Deviation=10). Lower scores indicate better function.**
- 40-50 suggests mild to moderate limitations
- 50-60 suggests moderate to severe limitations
- 60 suggests severe limitations

Interpretation

The Mayo-Portland Adaptability Inventory (MPAI-4) scores indicate significant overall improvement of our patients. Lower scores indicate a higher level of functioning as compared to other patients with acquired brain injury. A reduction of 5 is considered a Clinically Important Difference and a reduction of 9 is considered a Robust Clinical Difference. Upon admission in 2020, long term patients' average Total score was 58 (Moderate Global Impairment), reflecting deficits in body, function, activity limitations and participation restrictions. The average long-term discharge score was 47, an 11 point improvement (18%) and dropping the patients from the category of Moderate Limitations to the Mild/Moderate range. The Abilities subscale includes basic physical as well as cognitive capabilities. Most 2020 admissions had no significant physical deficits so the 6 point improvement reflected progress in attention/concentration, memory and problems solving. The Adjustment subscale reflects depression, anxiety, inappropriate anger, somatization, and social deficits. The robust 13 point improvement represents substantial progress towards management of those symptoms. Participation reflects a patient's ability for social integration in family, employment, money management and ability for self-care, including leisure pursuits. The 7 point improvement indicates clinically significant improvements. It is noted that substantial improvement in this category is necessarily harder to demonstrate prior to reintegration into the community.

Categorical Data Outcomes 2020

Return to Independence: The table below indicates that the discharge destination of 2020 patients primarily returned congregate living or group home. One returned home with family and the other, due to medical complication discharge to a skilled nursing facility.

1. Return to independence with minimal to moderate support <6 hrs/day	1
2. Return to congregate living or extended supports in the home >6hrs/day	2
3. Return to group home with 24 hr/day support	3
4. Return to nursing home or hospital setting 24 hr/day care	1

Vocational Reentry: The table below indicates that most 2020 patients were able to return to some type of vocational activity with supports. The only patient unable to participate in any type of vocational activity discharged to a SNF due to medical problems.

1. Supported employment or volunteer work	2
2. Sheltered workshop or day activity program	4
3. Unable to work	1

Social Role Return: The table below indicates that most patients continue to have moderate to significant difficulties resuming their social and interpersonal roles but four (57%) were able to return in some capacity.

1. Return home with independence or minimal modification to social role	1
2. Return home with moderate modifications to social role	3
3. Significant modification preventing a return to social role	3

Self-Management of Behavior: The table below indicates that 2020 discharge patients were able to manage their behavior with no more than weekly contacts. This represents a significant decrease in level of care and is commensurate with outpatient therapy.

1. No behavioral support services required	3
2. Weekly contact with therapist; 0-5 outburst per week	4

CONCLUSION: Objective and categorical data from seven patients to discharge in 2020 reflect substantial improvement across a wide range of abilities as measured by the Mayo Portland Adaptability Inventory-4. The most significant improvements occurred in areas of psychiatric symptoms, anger management, and improved social interaction. Additional improvements included progress in cognitive functioning as well as capacity for community reintegration. Those improvements allowed our patients to discharge to a lower level of care. Of the 7 discharges, 43% returned to partial independence, 43% to group home and one individual discharge to a skilled nursing facility. Four (57%) were able to resume elements of their prior social roles. Six of the seven (86%) returned to some type of vocational activity ranging from supported employment to a sheltered workshop. All seven discharge patients were able to manage their prior maladaptive behavior with no more than weekly outpatient therapy. Three (43%) required no behavioral support services at all. These results indicate that NRI programming continues to have a positive impact on its patients, improving emotional and social functioning and allowing for discharge to a lower level of care.

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