

NRI Outcome Validation Study Highlights for 2012 Patient Demographics and Characteristics

Demographics and Characteristics

The NRI Outcome Study for the period ending December 31, 2012, addressed the discharges of 21 individuals. There were 15 males and 6 females. At admission, the average age was 39 with a range of 19 to 68. The average length of stay in the NRI program was 35 weeks with a mode of 3 weeks and a range of 2 weeks to 7 years.

Mechanism of Injury

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

Introduction

During 2012, the NRI program experienced changes within the professional staff with the addition of a new licensed clinical social worker who added specialized services for patients with personality disorders. Further, NRI provided training to counseling and occupational therapist assistant externs and interns in 2012. A number of programming changes occurred including increased opportunities for all patients to go into the community to practice community reintegration skills acquired during their rehabilitation. Increased structure and optional programming for evening and weekend hours was added. A peer council was established on which all patients rotate and participate in identifying peers who exhibit most effective behavioral self-management. Individuals selected by the council were provided various self-chosen positive reinforcers/rewards. The NRI outcome study continues to include objective outcome measures including the Brief Neuropsychological Cognitive Examination (Tonkonogy, 1997) and the Mayo-Portland Adaptability Inventory (MPAI-4) developed by Malec and Lezak (2003). The objective measures are combined with previous categorical measures that address the areas of Return to Independence, Social Role Return, Vocational Re-entry, and Self Management.

In using objective measures, the MPAI-4 has an Adjustment subscale that speaks to behavior management, and that subscale took the place of the Self-Management of Behavior category in 2009. During 2010, the Self-Management of Behavior category was re-implemented. Following is the NRI Outcome Validation Study for 2012.

Categorical Data Outcomes 2005-2012

TABLE 1. Return to Independence

The table below indicates that the discharge destination of clients who completed the NRI program primarily returned home with minimal to moderate supports for 2012.

	2005	2006	2007	2008	2009	2010	2011	2012
Return to independence with minimal to moderate support <6 hrs/day	60%	45%	14%	14%	0%	13%	6%	24%
Return to congregate living or extended supports in the home >6hrs/day	10%	0%	14%	29%	50%	17%	65%	38%
Return to group home with 24 hr/day support	10%	33%	57%	14%	11%	37%	29%	19%
Return to nursing home or hospital setting 24 hr/day care	20%	22%	15%	43%	39%	33%	0%	19%

TABLE 2. Vocational Re-Entry

The return to meaningful life activities such as work, school, and volunteering is an important measure of completing rehabilitation. The return to competitive employment, school or vocational training program increased from 2011 to 2012.

	2005	2006	2007	2008	2009	2010	2011	2012
Return to competitive employment, school or vocational training program	0%	11%	0%	14%	0%	0%	6%	19%
Supported employment or volunteer work	10%	11%	17%	14%	0%	13%	22%	9%
Sheltered workshop or day activity program	20%	11%	33%	29%	11%	29%	17%	19%
Unable to work	50%	45%	33%	0%	50%	42%	44%	29%
Requires 24 hr/day supervision	20%	22%	17%	43%	39%	16%	11%	24%

TABLE 3. Social Role Return

The return to pre-injury social role is a determinant in an individual maintaining his or her independence over time. Returning to pre-injury social role and responsibilities increased from 2011 to 2012 with a decrease over the past two years in those requiring 24 hr/day supervision.

	2005	2006	2007	2008	2009	2010	2011	2012
Return home with independence and minimal modifications to social role	0%	12%	0%	14%	28%	4%	11%	14%
Return home to dependent care status	70%	33%	33%	14%	11%	21%	17%	19%
Return home with <2 hrs/day paid behavioral support	10%	0%	33%	10%	0%	0%	0%	0%
Return home with >2 hrs/day paid behavioral support	0%	0%	0%	24%	11%	4%	17%	24%
Attend day program providing structured care 3-5 days/week	0%	33%	71%	14%	11%	8%	0%	10%
24 hr/day Supervision	20%	22%	0%	24%	39%	63%	55%	33%

TABLE 4. Self Management of Behavior								
The self-management of behavior is a key factor in long-term success. Individuals completing the NRI program demonstrate an increase in their capacity to self-regulate behavior.								
	2005	2006	2007	2008	2009	2010	2011	2012
No behavioral support services required	30%	45%	66%	28%	See MPAI results	0%	11%	23%
Weekly contact with therapist, 0-5 outbursts per week	10%	0%	17%	28%	See MPAI results	33%	44%	57%
2 or more contacts per week with therapist, 6+ outbursts per week	20%	0%	0%	0%	See MPAI results	16%	6%	10%
Requires daily structured behavioral program	20%	33%	0%	0%	See MPAI results	13%	6%	0%
24 hour placement	20%	22%	17%	44%	See MPAI results	38%	33%	10%

Data Outcomes 2012

TABLE 5. BNCE and MPAI-4

2012 Results for BNCE and MPAI-4						
BNCE		Mayo-Portland				
			Ability	Adjustment	Participation	Total
Admit	15.7	Admit	53.9	57.9	56.6	59.9
D/C	16.4	D/C	49.6	48.9	49.2	50.7
Diff	+0.7	Diff	-4.3	-9.0	-7.4	-9.2
n = 14		n = 21				

Table Notes

- BNCE: in general, a total score <22 indicates the individual will struggle living alone.
- BNCE: higher scores indicate a better level of functioning.
- MPAI-4: Scores reported as t-scores (Mean=50; Standard Deviation=10). Lower scores indicate a better level of functioning.

Interpretation

From the table, the BNCE data and cut-off scores reflect that the NRI patients at admission had from mild to severe deficits related to their injury. With an average admission score of 15.7, results indicated that individuals in the study will struggle to live without significant support systems. From the average discharge score, the data indicates that the patients, on average, experienced positive improvement (+0.7). Of note, however, the above data is likely not the best representation of study participants as a group. For example, admission BNCE scores ranged from no problems (28) to severe (4) and discharge scores varied widely, as well, with scores

ranging from mild (27) to severe (4) deficits. In general, participants saw modest changes in functioning upon comparison of pre and post-treatment.

The Mayo-Portland data total score indicates an overall improvement of (-9.2). Recall the lower scores are reflective of a higher level of functioning and a negative value indicates an improvement in functioning on the MPAI-4. Looking at the subscales, the Ability subscale, that measures domains such as mobility, motor/speech, attention/concentration, and memory, had a score difference of (-4.3). The Adjustment subscale measures issues such as anxiety, depression, irritability, anger, aggression, inappropriate social interaction, and impaired self awareness. This data shows a change of (-9.0). The Participation sub-scale reflects a (-7.4) difference. This subscale measures domains such as initiation without prompting, social contact, self-care, independent living skills, transportation, employment and managing money. Within each of the aforementioned areas, patients on average showed improvement as average scores upon admission reflected moderate to severe deficits with discharge data showing deficits primarily within the mild range.

Conclusion

The NRI program has used objective measures for program evaluation for the past four years. Categorical outcomes related to independence, social role return, and vocational re-entry (see Tables 1-4) are cross-referenced to the objective measures. In conclusion, results continue to represent positive outcomes for the individuals we serve. Efforts will continue to be placed toward improving the outcomes through empirically validated measures as a part of the research base for individuals living with the effects of brain injury.