NRI
Outcome Validation Study Highlights for 2015
Patient Demographics and Characteristics

Demographics and Characteristics

The NRI Outcome Study for the period ending December 31, 2015, addressed the discharges of 19 individuals. There were 18 males and 1 female. The age range was 20-56 and the average age at discharge was 37. The average length of stay on the NRI program was 2.2 years with a range of 3 weeks to 16 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 2015, the NRI program has experienced a higher census with the average number of patients being thirty patients. In December 2015, Dr. Martindale began his role as psychologist and Director of NRI. Currently, NRI has two full-time clinical therapists, a cognitive speech and language therapist, occupational therapist, an occupational therapy assistant, and a part-time physical therapy assistant. Additional staff includes a recreational therapist and job coach.

NRI patients are exposed to individual and group therapy across a variety of modalities. Recreational therapy both on and off campus are also frequently offered. For those interested in culinary activities, a cooking class meets weekly for NRI patients.

The transitional living center (TLC) is also a less-restrictive environment that is offered to patients following successful progress within inpatient NRI. Patients are exposed to an appropriate level of structure with greater independence and the opportunity to initiate and complete tasks with minimal assistance such as cooking nightly. In addition, new developments are being made in offering volunteer activities for TLC patients to include volunteering at organizations in the community.

Outcome Measures

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 2015.

Categorical Data Outcomes 2006-2015

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 2015.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Return to independence with minimal to moderate support <6 hrs/day	45%	14%	14%	0%	13%	6%	24%	35%	17%	26%
Return to congregate living or extended supports in the home >6hrs/day	0%	14%	29%	50%	17%	65%	38%	19%	29%	16%
Return to group home with 24 hr/day support	33%	57%	14%	11%	37%	29%	19%	19%	27%	32%
Return to nursing home or hospital setting 24 hr/day care	22%	15%	43%	39%	33%	0%	19%	27%	27%	26%

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 decreased from 2012 to 2014 and may be related to increased severity of injuries.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Return to competitive employment, school or vocational training program	11%	0%	14%	0%	0%	6%	19%	11%	10%	5%
Supported employment or volunteer work	11%	17%	14%	0%	13%	22%	9%	0%	17%	26%
Sheltered workshop or day activity program	11%	33%	29%	11%	29%	17%	19%	0%	23%	21%
Unable to work	45%	33%	0%	50%	42%	44%	29%	79%	23%	16%
Requires 24 hr/day supervision	22%	17%	43%	39%	16%	11%	24%	10%	27%	32%

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 decreased from 2010 to 2013 with an increase over the past year in those requiring 24 hr/day supervision.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Return home with independence and minimal modifications to social role	12%	0%	14%	28%	4%	11%	14%	35%	10%	16%
Return home to dependent care status	33%	33%	14%	11%	21%	17%	19%	10%	13%	11%
Return home with <2 hrs/day paid behavioral support	0%	33%	10%	0%	0%	0%	0%	6%	3%	5%
Return home with >2 hrs/day paid behavioral support	0%	0%	24%	11%	4%	17%	24%	6%	4%	5%
Attend day program providing structured care 3-5 days/week	33%	71%	14%	11%	8%	0%	10%	19%	13%	16%
24 hr/day Supervision	22%	0%	24%	39%	63%	55%	33%	24%	57%	47%

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.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
No behavioral support services required	45%	66%	28%	See MPAI results	0%	11%	23%	4%	23%	0%
Weekly contact with therapist, 0-5 outbursts per week	0%	17%	28%	See MPAI results	33%	44%	57%	24%	43%	47%
2 or more contacts per week with therapist, 6+ outbursts per week	0%	0%	0%	See MPAI results	16%	6%	10%	24%	10%	0%
Requires daily structured behavioral program	33%	0%	0%	See MPAI results	13%	6%	0%	24%	11%	32%
24 hour placement	22%	17%	44%	See MPAI results	38%	33%	10%	24%	13%	21%

Data Outcomes 2015

TABLE 5. BNCE and MPAI-4 Scores

BNCE		MPAI - 4	
Average Admit Score	18	**Average Admit Score**	56.23
Average D/C Score	19.6	**Average D/C Score**	51.54
Difference	+1.6	**Difference**	-4.69
Admit n =11	D/C n = 11	Admit n = 13	D/C n = 13

Table Notes

- BNCE: in general, a total score <22 indicates the individual may need significant support systems.
- 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.
- The data above has (n) as less than the number of pt discharged due to missing data.

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 18, results indicated that individuals in the study will struggle to live without significant support systems. From the average discharge score of 19.6, the data indicates that the patients, on average, experienced a trend toward positive improvement. Admission BNCE scores ranged from minimal problems to severe and discharge scores varied widely with scores ranging from mild to severe deficits. In general, participants saw modest changes in functioning upon comparison of pre and post-treatment.

The Mayo-Portland average scores indicate an overall improvement. 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. Admission average score is 56.23 compared to a discharge average score of 51.54. The overall scores reflected an improvement on average of 4.69 points, or a reduction in score indicating overall improvement (recall that the lower the score on the MPAI the higher the implied functioning of the individual.

Conclusion

The NRI program has used objective measures for program evaluation for the past ten years. Categorical outcomes related to independence, social role return, management of behavior and vocational re-entry are provided. 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.

Respectfully submitted,

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