



**Neurologic
Rehabilitation
Institute at Brookhaven Hospital**



**About the
Study**

Since 1999, NRI has conducted an Outcome Validation Study to evaluate the performance and quality of its services and programming. The study looks at various groups that are serviced by NRI, as well as customer and staff satisfaction. Over the years, the study has evolved to better measure the relevancy of rehabilitation as related to the challenges faced by our clients as they return to independence, family, work and school. An important component of the outcome study is the durability of the outcomes attained by clients over time. The study presented online offers an overview of how NRI rates as a service provider.

NRI

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**Outcome Validation Study Highlights for 2006
Patient Demographics and Characteristics**

*General Characteristics
of the Persons Served*

The NRI Outcome Validation Study for the period ending June 30, 2006 addressed the discharges of 9 individuals. There were 8 males and 1 female. The average age at injury was 34 with an age at injury range of 21-53. At the time of admission to the NRI program, the average age was 43, with a range of 29-65. In terms of “years post injury at the time of admission”, the average was 9.8 years with a range of 1-36 years. The average length of stay in the NRI program was 18 weeks with a range of 2 weeks to 2 years and 9 months. All of the individuals discharged in this period were categorized as severe injuries at the time of their admission into emergency medical care. One individual had two documented Traumatic Brain Injuries in addition to several undocumented concussive type injuries. (This individual also had the longest length of stay.)

Injury Type/Mechanism

Six of the individuals sustained their injuries in Motor Vehicle Accidents (MVA) (66%). This includes the individual with two documented TBI’s. Two individuals sustained their injuries as pedestrians. Two of the other TBI events involved the individuals as unrestrained passengers ejected from a vehicle. One other MVA involved a rider of a recreational/sports vehicle (unprotected, unhelmeted). There were two anoxic injuries related to drug overdoses (22%) and another anoxic injury related to a CVA (11%). All of the nine individuals had medical complications related to their injury which prolonged their acute medical treatment and delayed their entry into neurological rehabilitation programs.

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Outcomes Attained

Pre-Injury Medical and Social History Characteristics

Four individuals had pre-injury psychiatric histories (44%), one had pre-injury learning disabilities (11%); one had a pre-injury medical problem (unrelated to the injury or complications) (11%); four individuals had pre-injury substance abuse problems (44%) and two had prior legal system involvement (22%). Of the 9 individuals, 8 were employed at the time of their injury (88%) and one was unemployed (11%).

Post-Injury Neurobehavioral Consequences

All (nine) individuals had post injury histories of aggressive behaviors, consisting of verbal and physical aggression towards others; aggression towards self; elopement; non-compliance and disinhibition. All had severe cognitive problems involving attention, arousal, selection, filtering, memory, information retrieval, learning and executive functions.

Comparison to TBI Populations in the United States and Canada

The individuals served by the NRI program are substantially older at the time of injury than the average age at injury observed in the United States and Canada (34.0 vs 24.9). The age factor is furthered by the average age at the time of program admission of 43. The key issues related to the age at the time of admission are: the number of years post injury and the history of failed, prior rehabilitation attempts seen by the individuals discharged from the NRI program. Of the cohort discharged in this period, the individual who was 36 years post-injury was clearly an outlier in terms of his years post-acuity caused by his age at injury and age at the time of his admission. 66% of the individuals sustained their injuries in MVA's. This is consistent with the injury causation factors in the U.S. and Canada. Our level of severity, however exceeds the distribution of severity types in the U.S. and Canada. This is caused by the programs's selection bias and specialization in neurobehavioral rehabilitation. The population served by the NRI program in this period also represented a higher percentage of individuals with pre-injury psychiatric and substance abuse problems at 44.4% than it commonly seen in the TBI population in the U.S. and

Canada. The pre-injury behavioral health and substance abuse problems observed in the NRI program population is related to the post-injury neurobehavioral problems experienced by these individuals.

Discharge Placements

At the time of discharge from NRI all nine individuals returned to a lower level of care. Eight returned to a placement closer to home or to home. One returned to competitive employment and one entered into Supported Employment.

The characteristics of the individuals served by the NRI program in this period are consistent with the factors observed in the NRI populations in prior periods of the study.

Return to Independence

The table below indicates the discharge destination of individuals who have completed the NRI program has shifted towards returning home with minimal to moderate supports in the period 2003 to 2006.

	2003	2004	2005	2006
Return to independence with minimal to moderate support <6 hrs/day	7%	13%	60%	45%
Return to congregate living or extended supports in the home >6hrs/day	35%	25%	10%	0%
Return to group home with 24 hr/day support	29%	12%	10%	33%
Return to nursing home or hospital setting 24hr/day care	29%	50%	20%	22%

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 and supported employment increased in 2005 and 2006.

	2003	2004	2005	2006
Return to competitive employment, school or vocational training program	0%	0%	0%	11%
Supported employment or volunteer work	0%	0%	10%	11%
Sheltered workshop or day activity program	14%	13%	20%	11%
Unable to work	72%	75%	50%	45%
Requires 24 hr/day supervision	14%	12%	20%	22%

Conclusion

Our Outcome Validation Study demonstrates that patients in the NRI program achieve strong results upon their completion of the program. We're proud of our achievements and continue to look for areas of improvement so that we can better help future clients.

Social Role Return

The return to pre-injury social role is a determinant in an individual maintaining their independence over time. Returning to pre-injury social role and responsibilities has increased in 2006.

	2003	2004	2005	2006
Return home with independence and minimal modifications to social role	0%	0%	0%	12%
Return home to dependent care status	71%	25%	70%	33%
Return home with <2 hrs/day paid behavioral support	0%	0%	10%	0%
Return home with >2 hrs/day paid behavioral support	14%	13%	0%	0%
Attend day program providing structured care 3-5 days/week	0%	12%	0%	33%
24 hr/day Supervision	15%	50%	20%	22%

Self Management of Behavior

The self management of behavior is a key factor in long term success. The individuals completing the NRI program demonstrate an increase in their capacity to self regulate their behavior

	2003	2004	2005	2006
No behavioral support services required	57%	25%	30%	45%
Weekly contact with therapist, 0-5 outbursts per week	7%	0%	10%	0%
2 or more contacts per week with therapist, 6+ outbursts per week	0%	0%	20%	0%
Requires daily structured behavioral program	14%	25%	20%	33%
24 hour placement	22%	50%	20%	22%