

Grant Final Report

Grant ID: 5UC1HS15052

Creating an Evidence Base for Vision Rehabilitation

Inclusive Dates: 09/01/04 - 08/31/08

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Abstract

Purpose: “Creating an Evidence Base for Vision Rehabilitation,” focused on the implementation of the Electronic Vision Rehabilitation Record (EVRR®) - a patient care system designed to allow for standardized patient assessment and intervention of vision rehabilitation. The project objectives were to increase patients’ functional ability, to determine predictors of optimal post-intervention functional ability, and to achieve optimal levels of perceived patient satisfaction.

Scope: The project involved the installation and implementation of EVRR® at Lighthouse International, The IRIS Network in Maine, and the Central Association for the Blind and Visually Impaired (CABVI) in Utica, New York.

Methods: EVRR®’s methodology is consistent with the functional model of rehabilitation which involves the assessment of the patient's functional difficulties and relating them to needed interventions. Following service delivery, patients are re-assessed to document changes in functioning. EVRR® and patient satisfaction surveys served as data sources.

Results: All self-assessment and provider intervention functional ability scores significantly improved following the receipt of service, with the exception of one at one agency. Receiving a orientation and mobility (safe travel) intervention consistently emerged as a predictor of optimal post-service functioning. Patient satisfaction surveys demonstrated high levels of satisfaction with services received.

Key Words: vision rehabilitation outcomes, low vision

<p>The authors of this report are responsible for its content. Statements in the report should not be construed as endorsement by the Agency for Healthcare Research and Quality or the U.S. Department of Health and Human Services of a particular drug, device, test, treatment, or other clinical service.</p>
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Final Report

Purpose

The primary purpose of the project “Creating an Evidence Base for Vision Rehabilitation” was to implement the Electronic Vision Rehabilitation Record (EVRR®) - a patient care system that would improve the consistency and quality of vision rehabilitation interventions across agencies and individual providers to appropriately restore safe functioning and self-reliance for those with visual impairment. Vision rehabilitation services - individualized therapeutic interventions and counseling designed to restore functioning, safety and self-sufficiency to people with vision loss - include such interventions as techniques of orientation and mobility (safe travel), independent living tasks (cooking and child care safety), and psycho-social interventions. The field of vision rehabilitation however lacks uniform, recognized measurement and evaluation tools that quantify improvement. Hence, the first step required was to establish uniform definitions and measurements of functioning across vision rehabilitation health care providers, and then to collect sufficient evidence to support and document best-practice assessments of functioning. The subsequent implementation of the project and its activities were intended to assure that patients receive consistent, high-quality, standardized care thereby delaying the functional decline associated with vision loss. The system is creating a large outcome-measures database by which to evaluate the effectiveness of current best practice and help refine practice as the evidence indicates.

EVRR® was designed and implemented to achieve three main objectives:

1. To significantly increase patients’ functional ability from the pre-service to the post-service period in each of the interventions, i.e. orientation and mobility (O&M), independent living/vision rehabilitation teaching (VRT), and psycho-social services (PS).
2. To determine socio-demographic and service predictors of optimal post-intervention functional ability.
3. To achieve optimal levels of perceived patient satisfaction.

Please note that project objectives changed as they were outlined in the original proposal as the project was being implemented and evolved as a result. Moreover, the necessary radical re-design and overhaul of the EVRR® system led to an inability to assess some of the objectives outlined in the original proposal. These changes were addressed in quarterly reports.

Scope

In the US 16.5 million people age 45 or older self-report some form of vision impairment even when wearing glasses or contacts. (Lighthouse National Survey on Vision Loss, 1995). By 2010, this figure will grow to 20 million. As the baby boomer generation ages, with people living longer and an increase of conditions that cause vision loss, such as diabetes, the need for quality vision rehabilitation services is critical in reducing the disabling effects of vision loss.

Unfortunately, this field until recently lacked standardized measurement and evaluation tools urging Lighthouse International (LHI), the lead agency on this project, to design and build a software which would allow for standardized patient tracking, assessment and evaluation, patient-centered intervention with goal setting, documentation of service delivery, and outcomes measurement. The project involved the installation and implementation of EVRR® at Lighthouse International, The Iris Network in Maine, and the Central Association for the Blind and Visually Impaired (CABVI) in Utica, New York representing urban, suburban, and rural environments in two states.

The activities necessary to carry out the project fell into four major areas:

1. General program management
2. Best practice protocols
3. Technical implementation
4. Research and evaluation

General Program Management. General program management activities included directing the team of Lighthouse staff and consultants who supported all the collaborating participant organizations, holding monthly partner meetings and weekly subcommittee meetings to discuss implementation and problems that arose as well as their proposed solutions

Best Practice Protocols. Three major activities were involved in the development of best-practice protocols. The first was the development of a training manual that integrated the use of best-practice protocols and the operation of the EVRR® system. As the EVRR® system was re-designed and moved to a web-based application the training manual was revised accordingly and integrated into the system and re-designed with a search and frequently-asked question function. The online manual is accessible for blind and visually impaired users.

The second key task was training rehabilitation staff in the use of the system and its core components by an IT expert and in assessment of patient functioning, operation of the scheduling, visit record, and progress noting function by the respective intervention subject matter experts.

The third major task was the formation of a group of providers who were extremely proficient users and who were assigned as the “go-to” person in each of the intervention areas in case users had questions in the use of the system. These so called “The EVRR® Champions” also participated in monthly meetings with IT and research and evaluation staff members to report on progress in the use of the system among providers as well as the to provide suggestions on how the system can be improved.

Technical Implementation. The third key component of the implementation involved the design (with input from subject matter experts), dissemination and testing of software, its installation, and the hardware and connectivity solutions to support EVRR® at the various locations.

Research and Evaluation. The research and evaluation team was instrumental in the re-design of the assessment instruments and the national (subsequently international) database as well as in the implementation of the newly designed web-based system. All data analyses and report writing was carried out by this team. Presentation of the project to the Internal Review Board and protection of human subjects were also activities carried out in the research area. Please note that the list of national database items was revised after the implementation of the new system and after the Canadian National Institute for the Blind (CNIB) committed to using the EVRR® system in December 2007. The database was then renamed from national database to international database. This modified database will be available at the end of 2009 following the implementation of EVRR® at CNIB throughout Canada.

Participants

Between 10/1/2006 and 10/01/2008, 6,764 patients aged 18 or older were registered for services at the three partner agencies (Lighthouse International, CABVI, and IRIS) using EVRR®. Of these, 5,139 were registered at Lighthouse International (76%), 1,019 were registered at IRIS (15%), and 606 were registered at CABVI (9%).

Table 1 illustrates socio-demographic characteristics of participants. Sixty-one percent of study participants were women and the vast majority was white (93.2%). The average age of participants was 71.6 years (SD = 20.12) with ages ranging between 18 and 109 years. Nearly one third of participants were married (30.5%) and about one half of all clients (49.6%) had a high school diploma only.

Table 1. Patient demographic characteristics of clients

Characteristic	%	n
Marital Status: Single	27.0	1001
Marital Status: Married or Significant Other	30.5	1270
Marital Status: Divorced	9.9	259
Marital Status: Widowed	16.1	1089
Marital Status: Other	7.8	85
Gender: Female	61.4	4165
Gender: Male	38.6	2614
Racial Background: White	93.2	1091
Racial Background: Black	3.6	42
Racial Background: Hispanic	2.7	32
Racial Background: Asian	0.3	3
Racial Background: American Indian/Alaskan Native	0.3	3
Educational Background: Less than High School	20.7	208
Educational Background: H.S. Grad/GED	49.6	497
Educational Background: Some College or Associate's	11.0	110
Educational Background: Bachelor's Degree	11.2	112
Educational Background: Master's Degree or more	7.6	76
Age (M, SD)	71.6	20.15

Methods

Software Design

EVRR®'s methodology is consistent with the functional model of rehabilitation which involves the assessment of the patient's difficulties performing various activities of daily living and relating them to needed interventions.

EVRR® consists of the following modules:

1. Registration
2. Eye and Health Characteristics Documentation
3. Pre and post service functional assessments for the following vision rehabilitation interventions:
 - Orientation and Mobility
 - Vision Rehabilitation Teaching/Independent Living Skills
 - Psycho-social Services
 - Occupational Therapy
 - Employment Placement and Job Retention
 - Adaptive Technology/Computer training
4. Vision Rehabilitation Goals (realistic and agreed-to)
5. Visit Documentation
6. Progress Notes (Interim and Final)

During the course of this project, Lighthouse International due to technical problems was forced to completely overhaul EVRR® by re-designing it as a web-based as opposed to a server based system. In addition assessment instruments were modified and new assessments were designed, e.g. occupational therapy. Some of the features of this new software include the following: user-friendly, web enabled, fully accessible for visually impaired providers, multi-browser support (Internet Explorer, FireFox), built-in administrative tools, defined user roles, tool tips with Integrated Help and FAQ's, error handling, system audit trail, and integrated scheduling (MS Outlook).

Please note that all data analyses for this project focused on the original/core assessments, i.e. orientation and mobility (O&M), independent living/vision rehabilitation teaching (VRT), and psycho-social services (PS). Of the 6,764 patients who were registered and applied for services,

the largest number received vision rehabilitation therapy, followed by orientation and mobility and then psychosocial interventions. Most participants received one intervention with the numbers of interventions ranging between 1 and 4.

Data Sources

Two main data sources were utilized for analyses: [1] data on patient socio-demographic characteristics, functioning and vision rehabilitation service use assessed using the EVRR® software (study objectives #1 and #2), and [2] data from patient satisfaction surveys conducted following service provision (study objective #3).

Measures

Socio-demographic Characteristics. Single items were used to assess age, gender, race/ethnicity, marital status, and educational background.

Vision Rehabilitation Service Use. Hours of services delivered as part of the various interventions was utilized as an indicator of service intensity.

Client Functioning. The EVRR® pre- and post-service assessment in a particular skill area/intervention, e.g. O&M consists of the two following components:

- a. **Self-Assessment of Functioning:** Each item asks the client to rate “how much difficulty” he/she is having completing a particular task because of vision on a 4-point scale (“a great deal of difficulty” to “no difficulty”).
- b. **Provider Ratings of Client’s Functioning:** The provider component reflects how the professional rates the client’s functioning in a particular skill area [intervention]. The provider component consists of various tasks that the provider can observe. The provider then rates the client’s ability to carry out the task on the same 4-point difficulty scale described above.

EVRR® allows for the determination of the following indicators of functioning:

1. **Self-Assessment Intervention Pre-service Functional Ability Score** (functioning measured in a particular skill area, for example, O&M, before service) – the score that reflects the patient’s perceived level of functioning in a particular skill area [intervention] prior to service.
2. **Provider Intervention Pre-service Functional Ability Score** (functioning measured in a particular skill area, for example, O&M, before service) – the score that reflects the provider’s perception of the level of patient functioning in a particular skill area [intervention] prior to service.
3. **Self-Assessment Intervention Post-service Functional Ability Score** (functioning measured in a particular skill area, for example, O&M, after service) – the score that

reflects the patient's perceived level of functioning in a particular skill area [intervention] following the provision of service.

4. Provider Intervention Post-service Functional Ability Score (functioning measured in a particular skill area, for example, O&M, after service) – the score that reflects the provider's perception of the level of patient functioning in a particular skill area [intervention] following the provision of service.
5. Self-Assessment Pre-service Functional Index - the score that reflects patient's perceived overall level of functioning across all skill areas prior to service and is calculated as the average of all Self-Assessment Intervention Pre-service Functional Ability Scores in skill areas where client has agreed to service.
6. Provider Pre-service Functional Index - the score that reflects provider's perception of the overall level of patient functioning across all skill areas prior to service and is calculated as the average of all Self-Assessment Intervention Pre-service Functional Ability Scores in skill areas where client has agreed to service.
7. Self-Assessment Post-service Functional Index - the score that reflects patient's perceived overall level of functioning across all skill areas following the provision of service and is calculated as the average of all Self-Assessment Intervention Pre-service Functional Ability Scores in skill areas where client has agreed to service.
8. Provider Post-service Functional Index - the score that reflects provider's perception of the overall level of patient functioning across all skill areas following the provision of service and is calculated as the average of all Provider Intervention Post-service Functional Ability Scores in skill areas where client has agreed to service.

All indicators of functioning are expressed in a 100-point scale with higher numbers indicating higher functional ability or a lower number of functional problems. Optimal functioning for all indicators was defined as functioning at 80% or higher which equals a functional ability score or a functional index of 80 or higher.

Patient Satisfaction. In an effort to assess patient satisfaction with services, Lighthouse International (LHI) collaborated with the Canadian National Institute for the Blind (CNIB) in developing a short patient satisfaction survey as the other sites did not have the capacity at this time to conduct a survey. Several components of the instrument were tailored after the AHRQ Consumer Assessment of Health Plans Survey (CAHPS) and were made applicable to a vision rehabilitation setting.

Overall level of satisfaction with services was assessed using three indicators of global satisfaction. The first indicator assessed overall level of satisfaction with the services received at the Lighthouse on a 5-point scale (1=very dissatisfied; 5=very satisfied). Optimal satisfaction for this item was defined as at least 80% of participants reporting either being overall somewhat or very satisfied with the services they received. The second indicator assessed on a 3-point scale if the patient would return to the Lighthouse if additional services were needed in the future (1=no, definitely not; 3=yes, definitely). The third indicator assessed also on a 3-point scale if the

patient would recommend the Lighthouse to others (1=no, definitely not; 3=yes, definitely). For the second and third indicator of overall satisfaction level, optimal satisfaction was defined as at least 80% of participants choosing “yes, definitely” as an answer.

In addition, the instruments assessed satisfaction with the following service features on a 5-point scale; (1=poor; 5=excellent):

- Access to care (3 items)
- Technical Quality (1 item)
- Communication with service providers (2 items)
- Interpersonal Care (3 items)

Optimal satisfaction with features of services was defined as at least 80% of participants rating at least five of the nine features of services items as either “good”, “fair”, or “excellent”.

Data Analysis Plan

To determine if and how the three main project objectives had been met, the following data analyses were conducted:

1. Paired sample t-tests were conducted to determine if there was a significant increase in the patient’s perceived functional ability as well as the provider’s perception of the patient’s functional ability from pre-service to post-service in each of the interventions, i.e. orientation and mobility (O&M), independent living/vision rehabilitation teaching (VRT), and psycho-social services (PS). Data analyses were conducted separately for each agency since partner agencies had modified some of the assessment questions to fit their specific intervention requirements. Hence, in total 18 paired sample t-tests were conducted. Across all agencies, paired pre and post-service self assessments were available for 426 patients who received orientation and mobility, for 971 patients who received vision rehabilitation, and for 85 patients who received psycho-social services. Paired pre and post-service provider ratings were available for 429 patients who received orientation and mobility, 970 patients who received vision rehabilitation, and 51 individuals who received psycho-social services.
2. Logistic regression analyses were conducted to determine which socio-demographic and service variables, specifically, the service hours in each of the intervention (service intensity), function as independent predictors of optimal/successful self-assessed post-service functional ability as well as optimal/successful provider post-service functional ability (a post-intervention functional index at 80% or higher versus a post-intervention functional index less than 80%). First, a correlation matrix (not shown) was computed to examine the interrelations among all study variables. Then a logistic regression model was employed that examined the effects of socio-demographic and service variables on the two indicators of post-service functional ability. In the first step, only socio-demographic variables significantly correlated with the two functional outcomes were

entered. In a second step, the number of service hours in the different interventions was entered.

3. Descriptive analyses were utilized to determine the previously described optimal levels of patient satisfaction. In total, data from 156 patient satisfaction interviews were available.

Results

Principal Findings

Patient Functioning (Paired Sample t-Tests). Paired samples t-tests were conducted to determine if there were significant changes from pre- to post-service for both the self assessment and provider functional ability scores for the various interventions (Table 2). Results demonstrate several significant changes in patient functioning from prior receipt of services to following service completion. Post-service self-assessments of functional ability were significantly higher for all the interventions at all agencies with the exception of the psycho-social assessment delivered at CABVI. Paired samples t-tests for provider ratings showed a similar trend with significantly higher provider ratings from pre- to post-assessment for the O&M and VRT interventions at all agencies and for the PS intervention at LHI and IRIS. CABVI did not assess provider functional ability scores in the psycho-social area.

Predictors of Optimal Functioning Following Service Provision (Logistic Regression). Correlational analyses showed significant associations between the optimal self-assessment post-intervention functional index and age, marital status, being female, and the number of O&M service hours. Moreover, there were significant associations between provider post-service functional index and age, marital status, being female, the number of O&M service hours, and the number of PS service hours. Level of education was not significantly associated with either functional outcome.

The first logistic regression analysis revealed that both age and receiving less than 2 O&M hours or more than 2 O&M hours emerged as significant predictors of the optimal self-assessment post-intervention functional index (Table 3). Specifically, higher age was associated with self-assessed optimal level of functioning; there was a 1.8% reduction in self-assessed optimal level of functioning with every year of advanced age. Compared to those who received no O&M hours, those who received less than 2 O&M hours were 1.2 times more likely to report a self-assessed optimal level of functioning; compared to those who received no O&M hours, those who received more than 2 O&M hours were 1.6 times more likely to report a self-assessed optimal level of functioning. Marital status, gender, number of VRT hours, and number of PS hours did not emerge as significant predictors of self-assessed optimal level of functioning.

Table 2. Paired sample t-tests of patient functioning

		LHI	IRIS	CABVI
O&M Self Assessment Pre:	Range	0-100	33-100	0-100
O&M Self Assessment Pre:	Mean	59.87	80.77	49.11
O&M Self Assessment Post:	Range	0-100	66-100	33-100
O&M Self Assessment Post:	Mean	66.50	92.69	69.56
O&M Self Assessment Post:	t-value	-8.18***	-5.12***	-13.67***
O&M Provider Rating Pre:	Range	0-100	43-95	0-100
O&M Provider Rating Pre:	Mean	69.99	86.50	62.76
O&M Provider Rating Post:	Range	0-100	88-100	42-100
O&M Provider Rating Post:	Mean	80.16	95.50	78.49
O&M Provider Rating Post:	t-value	13.00***	-3.44**	-14.97***
VRT Self Assessment Pre:	Range	0-100	0-100	0-86
VRT Self Assessment Pre:	Mean	41.30	54.90	32.08
VRT Self Assessment Post:	Range	0-100	11-100	14-100
VRT Self Assessment Post:	Mean	52.74	72.33	65.08
VRT Self Assessment Post:	t-value	-11.27***	-13.38***	-64.04***
VRT Provider Rating Pre:	Range	0-100	0-100	0-91
VRT Provider Rating Pre:	Mean	48.69	63.40	34.88
VRT Provider Rating Post:	Range	0-100	0-100	0-100
VRT Provider Rating Post:	Mean	72.79	75.63	66.57
VRT Provider Rating Post:	t-value	-16.29***	-10.50***	-63.13***
PS Self Assessment Pre:	Range	11-100	16-70	0-79
PS Self Assessment Pre:	Mean	56.17	29.62	46.82
PS Self Assessment Post:	Range	33-100	17-57	17-79
PS Self Assessment Post:	Mean	67.33	36.15	48.85
PS Self Assessment Post:	t-value	-5.66***	-2.94**	-1.43
PS Provider Rating Pre:	Range	16-100	7-83	
PS Provider Rating Pre:	Mean	69.67	48.77	
PS Provider Rating Post:	Range	16-100	7-83	
PS Provider Rating Post:	Mean	74.10	59.69	
PS Provider Rating Post:	t-value	-3.02**	-2.80**	

p < .05; ** p < .01; *** p < .001

Table 3. Logistic regression on prediction of self-assessed optimal functioning

Variable	B	SE	Wald	df	Odds Ratio	95 % C.I. for O.R. Lower	95 % C.I. for O.R. Higher
Age	-.018	.006	8.520	1	0.982**	0.970	0.994
Married (Yes)	.193	.244	0.626	1	1.213	0.752	1.954
Female (Yes)	-.194	.247	0.613	1	0.824	0.507	1.338
VRT Hours:< 2 hours			0.938	2			
VRT Hours:2 to 4 hours	.268	.279	0.925	1	1.308	0.757	2.259
VRT Hours:5 + hours	.134	.289	0.215	1	1.144	0.648	2.016
O&M Hours: No Service			9.905	2			
O&M Hours:< 2 hours	.790	.350	5.102	1	2.203*	1.110	4.373
O&M Hours: > 2 hours	.772	.296	6.800	1	2.163**	1.211	3.863
PS Hours:No Service			0.371	2			
PS Hours: 1 to 3 hours	-.295	.483	1.820	1	0.725	0.289	1.921
PS Hours: > 3 hours	-.649	.481	6.704	1	0.522	0.203	1.342

* p < .05; ** < .01; *** p < .001

The second logistic regression analysis demonstrated that receiving 5 or more VRT hours, receiving less than 2 O&M hours or more than 2 O&M hours, and receiving more than 3 PS

hours emerged as significant predictors of the provider post-service functional index (Table 4). Compared to those who received less than 2 VRT hours, those who received 5 or more VRT hours were 67.6% more likely to have a provider rating of optimal functioning. Compared to those who received no O&M, those who received less than 2 O&M hours were 3.2 times more likely to have a provider rating of optimal functioning; compared to those who received no O&M hours, those who received more than 2 O&M hours were 2.3 times more likely to have a provider rating of optimal functioning. Compared to those who received no PS hours, those who received more than 3 PS hours were 55.2% less likely to have a provider rating of optimal functioning. Age, marital status, and gender did not emerge as significant predictors of provider rating of optimal functioning.

Table 4. Logistic regression on prediction of provider rating of optimal functioning

Variable	B	SE	Wald	df	Odds Ratio	95 % C.I. for O.R. Lower	95 % C.I. for O.R. Higher
Age	-.010	.005	3.078	1	0.990	0.980	1.001
Married (Yes)	.163	.204	0.634	1	1.177	0.789	1.755
Female (Yes)	.071	.210	0.115	1	1.074	0.711	1.621
VRT Hours:< 2 hours			5.537	2			
VRT Hours:2 to 4 hours	.355	.234	2.297	1	1.426	0.901	2.255
VRT Hours:5 + hours	.516	.229	5.087	1	1.676*	1.070	2.625
O&M Hours: No Service			41.173	2			
O&M Hours:< 2 hours	1.428	.280	26.084	1	4.171***	2.411	7.217
O&M Hours: > 2 hours	1.181	.240	24.204	1	3.257***	2.035	5.214
PS Hours:No Service			5.267	2			
PS Hours: 1 to 3 hours	.348	.324	3.752	1	1.416	0.750	2.674
PS Hours: > 3 hours	-.803	.414	15.427	1	0.448*	0.199	1.010

* p < .05; ** < .01; *** p < .001

Patient Satisfaction. Table 5 contains frequencies for the items assessing global patient satisfaction. It appears that about 90% of clients reported being either somewhat or very satisfied with the services that they received at Lighthouse International (LHI). Secondly, 83% of participants indicated that they would contact LHI in the future and almost 90% reported that they would recommend LHI to others. Hence, all three of these global indicators met the criterion of optimal client satisfaction (at least 80%).

Table 5. Frequencies for global client satisfaction

	% (n)
<i>Overall, how satisfied were you with the services you received at LHI?: Very satisfied</i>	77.8 (119)
<i>Overall, how satisfied were you with the services you received at LHI?: Somewhat satisfied</i>	13.1 (20)
<i>Overall, how satisfied were you with the services you received at LHI?: Neither satisfied nor dissatisfied</i>	2.0 (3)
<i>Overall, how satisfied were you with the services you received at LHI?: Somewhat dissatisfied</i>	3.3 (5)
<i>Overall, how satisfied were you with the services you received at LHI?: Very dissatisfied</i>	3.9 (6)
<i>I will contact LHI for services and programs in the future if needed.: Yes, definitely</i>	83.1 (128)
<i>I will contact LHI for services and programs in the future if needed.: Yes, maybe</i>	10.4 (16)
<i>I will contact LHI for services and programs in the future if needed.: No, definitely not</i>	6.5 (10)
<i>I would recommend LHI to others.: Yes, definitely</i>	88.8 (135)
<i>I would recommend LHI to others.: Yes, maybe</i>	5.9 (9)
<i>I would recommend LHI to others.: No, definitely not</i>	5.3 (8)

Implications

Based on the project objectives and lessons learned from the implementation the following implications can be drawn:

1. All interventions delivered had an impact on improving functional ability with the exception for the psycho-social intervention at one partner agency. Hence, it appears that the use of the EVRR® system and its tools, specifically interventions that are based on standardized assessments, facilitates the restoration of functioning in patients with impaired vision and consequently helps in reducing the disabling effects of vision loss.
2. Receiving orientation and mobility services consistently emerged as a predictor of self-assessed optimal functioning and provider rated optimal functioning. This suggests that in order to improve overall functioning, many individuals with impaired vision could benefit from receiving instructions in safe travel/mobility techniques.
3. Patients who were served utilizing EVRR® and its tools consistently rated the quality of services received as demonstrated by optimal levels of patient satisfaction.
4. It is important to try to avoid any preconceived notions about an electronic record and in this case, EVRR®, until staff is trained and understands the logic and how it works.
5. Involving service providers and listening to their input is critical to the ‘buy-in’ to enhance utilization. Responding to staff recommendations for improvements to the electronic record and implementing changes is important.
6. The top management of the organization must be committed to an electronic record and repeatedly convey that compliance to document in EVRR® is standard expectation for job performance. Incorporation into position guides and annual performance standards is strongly recommended.
7. Reports need to be generated very early on in the implementation phase of an electronic record so that users can see the fruits of their labor.

List of Publications and Products

Presentations

Stuen C, Parsard, J. EVRR® – A Technology Solution for Service Providers. Presented at Vision 2008, The International Conference on Low Vision, Montreal, Canada , July 2008.

Stuen C, Cimarolli, V. An electronic vision rehabilitation record for evidence based practice. Presented at Gerontological Society of America, San Francisco, CA., November 2007.

Stuen, C. Development of an Evidence-Based, Electronic Record in a Vision Rehabilitation Setting. Presented at

American Society on Aging/National Council on Aging Conference, Chicago, IL, March 2007

Cimarolli, V. Electronic Vision Rehabilitation Record: Features and Functions. Invited presentation at the Josephine Taylor Leadership Conference, Dallas, TX. March 2007. Cheng EM, Siderowf A, Swartztrauber K, Eisa M, Lee M, Vickrey BG. Development of Quality of Care Indicators for Parkinson’s Disease. *Movement Disorders* 2004 19(2): 136-150.

Publications

Stuen C, Parsard J. EVRR® – A Technology Solution for Service Providers. *Proceedings of Vision 2008 International Conference on Low Vision: 2008 July 5-11; Montreal, Canada: International Society of Low-Vision Rehabilitation and Research.*

Stuen C. (April, 2008) AHRQ – *Supported Electronic Record System Focused on Best Practice for Vision*

Rehabilitation. Online publication of Agency for Healthcare Research and Quality. Health IT Implementation Stories. http://healthit.ahrq.gov/portal/serverpt?open=512&objID=654&&pageID=11983&mode=2&in_userid=3882&cached=true

Introductory orientations have been given virtually to the following organizations in 2007-2008:

VisionServe Alliance

Vision Australia

FIFE Society for the Blind (Scotland)

New Hampshire Association for the Blind

Lighthouse of Central Florida

National Accreditation Association

Guide Dog Foundation for the Blind

Aravind Eye Hospital (India)

Royal New Zealand Foundation for the Blind

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