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CENTER on KNOWLEDGE TRANSLATION for
DISABILITY and REHABILITATION RESEARCH

Employment After Traumatic Brain Injury

*A webcast of the Center on Knowledge Translation
for Disability and Rehabilitation Research (KTDRR)*

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Agenda

- Overview of Activity
- Presenters
- Discussion
- Wrap up

Overview

- What is research and its evidence base on employment for individuals with traumatic brain injury (TBI)?
- What does research say about the key issues that VR practitioners should consider in supporting clients to return to work after TBI?
- What are some of the VR practices related to supporting TBI survivors returning to work?
- What is the role of practice guidelines in supporting VR practitioners to work with clients with TBI?

Presenters

- **Jeffrey Kreutzer**, PhD, ABPP, Professor of Physical Medicine and Rehabilitation, Neurosurgery, and Psychiatry at Virginia Commonwealth University (VCU), Medical College of Virginia Campus
- **Alyssa Bonser**, BA, Vocational Rehabilitation Specialist at State of Maryland's Division of Rehabilitation
- **Maria Crowley**, MA, CRC, State Head Injury Coordinator for the Alabama Department of Rehabilitation Services

Traumatic Brain Injury (TBI) Definition

Damage to brain tissue caused by an external mechanical force as evidence by medically documented loss of consciousness or post-traumatic amnesia (PTA), or by objective neurological findings on physical or mental status examination that can reasonably be attributed to TBI.

TBI Model Systems National Data and Statistical Center Traumatic Brain Injury Model Systems National Database Syllabus

Critical Factors Affecting Employment

- **Primary Diagnosis**

Traumatic brain injury.

- **Secondary Diagnosis**

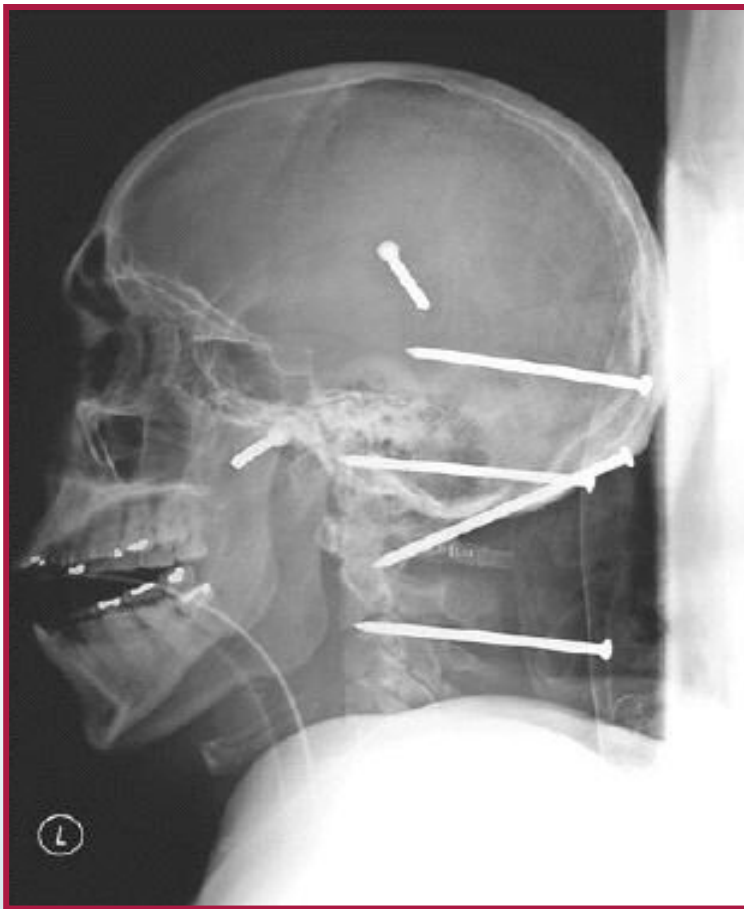
Hypertension, methicillin-resistant Staphylococcus aureus pneumonia, right neurosensory hearing loss, left partial rotator cuff tear.

- **History of Present Illness**

The patient is a xx year old male admitted on xx/xx/20xx after pedestrian versus car accident with loss of consciousness and an initial Glasgow Coma Scale of 70 in the emergency room. Head computerized tomography showed intraparenchymal hemorrhage, contusions to the right frontal and left frontal/temporal lobes, subdural hematoma, subarachnoid and non-displaced right occipital fracture. On xx/xx/20xx the patient had decompressive craniectomy, subdural hematoma evacuation, and a partial left temporal lobectomy.

The patient also had a non-displaced left clavicular fracture for which is non-weightbearing. The patient had tracheostomy placed on xx/xx/20xx and percutaneous endoscopic gastrostomy placed on xx/xx/20xx. His hospital course was complicated by left lower lobe pneumonia with methicillin-resistant Staphylococcus aureus for he was treated with vancomycin for 21 days.

Los Angeles, California (JP) – A construction worker who had six nails driven into his head by a high-powered nail gun is expected to make a full recovery.



Moderating Factors in Return to Work and Job Stability after Traumatic Brain Injury

	Stable Employment	Unstable Employment	Unemployed All Years
Admission GCS	8.61	7.74	7.51
Days unconscious	4.67	8.25	20.52
Days in acute care	13.95	20.86	32.98
Days in rehabilitation	21.61	33.94	53.70

GCS: Glasgow Coma Scale

Source: Journal of Head Trauma Rehabilitation, 2003, 18(2), 128-138.

Characteristics of Participants and Job Stability

	Stable Employment	Unstable Employment	Unemployed All Years
Transportation (1 year postinjury)			
Drives own vehicle	63%	27%	10%
Relies on others	15%	27%	58%

Chi Square, $p < .01$

Characteristics of Participants and Job Stability

	Stable Employment	Unstable Employment	Unemployed All Years
High school	20%	49%	31%
Some college	39%	17%	44%
College Degree	47%	16%	37%

Chi Square, $p < .01$

Neurobehavioral Problems

Most Commonly Reported 5 – 10 Years Postinjury

- | | |
|--------------------------------|-------------------------------|
| 1. Bored | 9. Tired |
| 2. Moves slowly | 10. Thinks slowly |
| 3. Frustrated | 11. Loses train
of thought |
| 4. Difficulty lifting | 12. Easily distracted |
| 5. Writes slowly | 13. Impatient |
| 6. Reads slowly | 14. Loses balance |
| 7. Poor concentration | 15. Misunderstood |
| 8. Trouble making
decisions | |



Witol, Sander, Seel, & Kreutzer, Journal of Vocational Rehabilitation, 1996

Neurobehavioral Problems

Most Commonly Reported More Than 10 Years Postinjury

1. Frustrated
2. Forgets reading
3. Impatient
4. Misunderstood
5. Bored
6. Loses train of thought
7. Reads slowly
8. Writes slowly
9. Moves slowly
10. Tired
11. Thinks slowly
12. Thinking of the right word
13. Restless
14. Trouble making decisions
15. Trouble following directions
16. Learns slowly



Most Commonly Reported* Slowness Problems



Symptom	5-10 yrs	10+ yrs
moving	2.54	2.22
writing	2.30	2.24
reading	2.34	2.27
thinking	2.27	2.19
learning		2.11

*among 15 most commonly reported

Most Commonly Reported* Mood Problems



Symptom	5-10 yrs	10+ yrs
bored	2.57	2.28
frustrated	2.40	2.44
impatient	2.20	2.33
misunderstood	2.14	2.33

*among 15 most commonly reported

Alcohol Use Patterns for Employed and Unemployed Persons*



	Abstinent	Light/ Infrequent	Moderate/ Heavy
Employed	34%	20%	46%
Unemployed	62%	12%	26%

Journal of Head Trauma Rehabilitation, 12(5), 1997

*Postinjury

Return to Work Barriers

- Workplace focus on productivity
- Competitive vs. collaborative work environment
- Ignorance and stereotypes contribute to intolerance of disability
- Tendency to compare client to preinjury
- Transportation challenges
- Lack of experienced employment specialists especially in rural areas

Maintaining Employment: Key Issues to Consider

- Client's expectations regarding timing and ability to carry out critical job requirements
- Level of workplace support
- Use of alcohol or non-prescription drugs; employment increases access
- Decision to return to same position or consider alternative employment options
- Costs of working and disincentives
- Patience and persistence

Best Practices – Neuropsychologist

- Neuropsychological assessment to determine cognitive and emotional functioning
- Assessing and enlisting family support
- Client education about common injury effects and strategies for effective workplace functioning
 - Learning to talk to others about the injury
 - Stress management
- Skills training: communication, goal setting, problem solving, controlling anger and other emotions

Best Practices – Employment Specialist

- Unobtrusive involvement in training work-related skills and behavior management
- Compensatory strategies development and implementation
- Promoting positive collegial and supervisor relationships
- Stress inoculation
- Problem solving interactions emphasizing positive feedback
- Phase out with mastery
- Availability of long-term supports to address changes

Best Practices

Findings from our prospective investigation also appear to support our prior research suggesting that the earnings reported by individuals with TBI in supported employment far exceed the costs associated with supported employment services supported employment programs are effective when provided by well-trained staff dedicated to understanding the needs of the persons served as well as the business. Many programs are not adequately prepared to serve persons with TBI at this time.

Wehman, Kregel, Keyser et al. (2003), Arch Phys Med Rehabil, 84

Best Practices

Clearly individuals with severe TBI present a very significant challenge to the rehabilitation team. Perhaps the most important conclusion that can be drawn is that patients with severe TBI and their families should no longer be led to believe that returning to work is impossible.

Wehman, West, Kregel, Sherron, & Kreutzer (1995), J Head Trauma Rehabil

Best Practices

The motivation of the individual and his or her family, acceptance of limitations, and supportive assistance from the rehabilitation agency are the key elements of success.



Wehman, West, Kregel, Sherron, & Kreutzer

Literature Gaps

- Direct comparison of alternative work models including self-employment, temporary staffing, and contracting work arrangements
- Efficacious return to work models targeted to minority group members
- Benefits of preventative intervention models that don't require employment failure as a criterion for receipt of services
- Efficacious intervention models for persons in higher level positions



VR Practices Guided by Research in Maryland

The Acquired Brain Injury (ABI) Employment Program in Maryland

- Historically, community providers of brain injury services developed relationships with a variety of Division of Rehabilitation Services (DORS) field counselors in order to facilitate employment services
- In 2006, advocates identified lack of comprehensive employment services for individuals with ABI to the Maryland Department of Disabilities resulting in funding allocated to DORS for development of specialized employment services program targeting individuals with ABI

The Acquired Brain Injury (ABI) Employment Program in Maryland (Cont.)

- Formation of the DORS ABI Steering Committee consisting of stakeholders from around the state
- Identification of designated ABI field counselors distributed around the state
- Establishment of array of services based on best practices to include neuropsychological evaluation, cognitive rehabilitation, employment services including long term supported employment

Service Delivery Protocol

Five phases of service delivery were identified, with services dependent on identified needs of the individual.

- Assessment
- Compensatory strategies
- Work readiness
- Job development
- Job coaching and supported employment (this phase is unique in that DORS will provide long-term job coaching support as part of post-employment services).

Criteria for Participation

- Meet federal eligibility criteria for DORS
- The primary cause of the disability must be a brain injury
- Meet DORS criteria for “most significant” disability (order of selection category 1)
- Medically stable
- Not actively abusing substances (committed to recovery) or in crisis (housing and medical supports in place)

The ABI Consortium of Providers and Practitioners

- Members of DORS administration and field staff
- Representatives from community providers
- Representatives from other state agencies
- Representative from advocacy organization (Brain Injury Association of Maryland)
- Research team from the University of Maryland College Park (for the first five years)

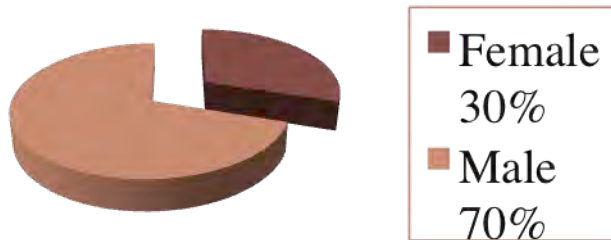
Research and Evaluation Component

- A research/evaluation element was implemented in partnership with the University of Maryland to examine the efficacy of this specialized service delivery approach to effectively meet the needs of persons with acquired brain injuries in achieving and maintaining employment.

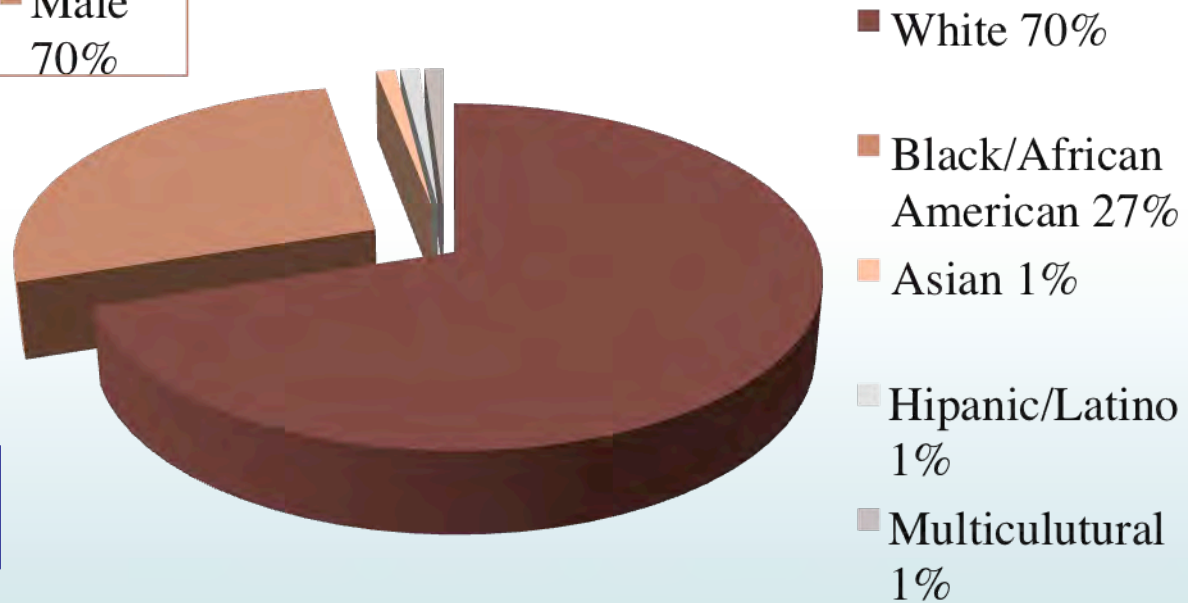
Demographic Statistics

Ellen Fabian and David Burnhill University of Maryland - College Park

Gender



Race/Ethnicity



• 77.1% High School or Above

Education Level Statistics

Ellen Fabian and David Burnhill University of Maryland - College Park

	Frequency	Percent
No formal schooling	1	.5
Elementary Ed.	3	1.4
SPED/Certificate	3	1.4
Secondary Ed/no diploma	35	16.4
High School Grad/GED	80	37.6
Post Secondary/no degree	40	18.8
AA Degree	16	7.5
Bachelors Degree	21	9.9
Masters Degree/higher	7	3.3
Missing System	7	3.3

Injury Statistics

Ellen Fabian and David Burnhill University of Maryland - College Park

	Frequency	Percent
Motor Vehicle Accident	100	46.9
Stroke	9	4.2
Seizure Disorder	3	1.4
Projectile Injury	2	.9
Tumor	10	4.7
Other	14	6.6
Cerebrovascular Accident	31	14.6
Assault	14	6.6
Fall	12	5.6
Congenital/Birth Injury	6	2.8
Total	201	94.4
*12 missing from system		

Case Status Outcomes

Ellen Fabian and David Burnhill University of Maryland - College Park

- There were 85 rehabilitated cases as of 9/30/2011. One consumer was rehabilitated twice, so, in actuality 84 individuals were rehabilitated before 9/30/2011.
- As of 9/30/2011, 53 cases are closed-other. Two of these cases were closed prior to an IPE.
- The ABI rehabilitation rate for the first five years is $84/(84+51) = 62.22\%$

Interventions: Supporting Client Populations

Interventions

- Cognitive Rehabilitation to improve cognitive functions
 - attention and concentration, conceptual thinking and problem solving, memory, and processing speed
- Individual psychotherapy
 - insights into strengths as well as deficits
 - compensatory strategies to deal with deficits and resulting negative effects

Interventions

- Collaboration and partnership with community rehabilitation providers
- Vocational Assessment
- Work adjustment training
 - Work attitudes and behaviors
 - Social skills training
 - Work simulation tasks
 - Job club

Interventions

- Job development/placement - 1:1 sessions with consumer
 - Resume
 - Job lead follow-ups
 - Job application process
 - Interview skill building and support
 - Post-interview follow-up methods
 - Reasonable accommodations

Interventions

- Job coaching
 - Provide 1:1 assistance to learn job duties
 - Develop compensatory strategies
 - Maintain appropriate employer-employee relationships
- Supported employment
 - Long term job supports
 - On-going monthly visits
 - On-going assessment of individual's needs
 - Facilitating job retention

Interventions

- Collaboration and partnership
 - Individual
 - DORS Counselor
 - Employment specialist/job coach
 - Any involved rehabilitation professionals
 - Educators
 - Other advocacy agencies
 - Support groups

Knowledge Base/Training

- Currently a second year graduate student at George Washington University
 - Major in Rehabilitation Counseling
 - Worked with a brain injury caseload since 2008
- Ongoing training through DORS' ABI Consortium meetings
 - Training topics include neurobehavioral issues, vocational issues after TBI, substance abuse, legal issues, benefits, assistive technology, cognitive strategies, driving after brain injury, etc.

VR Strategies to Support Individuals with TBI

- Make the job as procedural as possible
- Involve the individual directly in the planning process
- Maintain open communication
- Use multiple modalities for learning
- Establish a structured routine of daily tasks
- Break tasks into smaller steps
- Encourage the individual to write down new information and refer to it frequently
- Encourage the use of external aids to plan, record and check off tasks as completed

Low Tech External Aids

Low tech external aids- pencil/paper systems and simple organization tools

- Checklist: used to record lists for items and/or steps for specific routines
- Wall calendar or daily planner: used to record appointments and events
- Notebooks: used to record/check information for various purposes
- Timer: used to monitor time during specific activities
- Medication boxes: used to organize medications by day and time

High Tech External Aids

High tech external aids- electronic devices

- Digital voice recorder: used to record information
- Programmable watch: used for alarms/reminders to help recall important activities/events.
- PDA (personal digital assistant): a "pocket computer" with several features including: alarms, calendar, contact information, internet, e-mail, etc.
- Smartphone: combines a mobile phone with handheld computer functions as well as GPS

VR Strategies to Support Individuals with TBI

- Outline procedures for managing behaviors
- Educate work supervisors on how to cue the individual and how to introduce new work tasks
- Provide in-the-moment feedback during learning phase of any work task or behavioral monitoring procedure
- Keep the individual's work environment free from distractions when possible

Challenges

- Complexities and characteristics of the injury itself
- Impaired self-awareness
 - Reduced awareness of deficits and limitations
 - Overestimates abilities; underestimates problems
 - Inaccurate perception of self
- Difficulty with self-control
 - Acts or speaks without all the information or considering the consequences
 - Impulsiveness or poor judgment
 - Lack of inhibition
- Availability of services/transportation issues

VR Counselors' Needs

- Continued community partnerships and cross training among agencies, organizations and disciplines
- Designated agency point of contact (administrative) with expertise in ABI
- Additional Community Rehabilitation Providers that specialize in TBI
- Local therapists specializing in TBI that are accepting of public assistance such as Medical Assistance and Medicaid
- A variety of local support groups for TBI survivors
- Transportation resources for the TBI population

Communicating to Employers

- Experience with Supported Employment as a successful model
- Promote an interdisciplinary team approach
 - Goals set in a collaborative manner.
 - lead to coordinated rehabilitation and allows for greater efficiency in reaching goals
 - all team members (individual, employer, employment specialist/job coach, etc.) will be attempting to utilize the same approaches for the target behaviors or goals leading to successful employment.

Trends, Successful Approaches and Resources: A State VR Leader's Perspective

Trends in Employment and TBI: Observations, Barriers and Predictors

- Self Awareness and decision making
- Family supports
- Addiction and behavior
- Stamina/fatigue
- Ability to form/maintain relationships
- Resources/transportation-rural areas
- Service providers and level of expertise
- Variability of individual clients

Successful Approaches and Strategies

- Prevocational Counseling – Transition to VR
- Home => Community => Work
- Neuropsychological Assessment and feedback
- “Start Low and Build Slow”
 - Easing into school and work
 - College prep, class audits, pt employment
- Volunteer or unpaid work experience
- Long-term follow-up and closure
- Group approach – teams & staffings
- Small & specialty caseloads

Resources and Information

- Evidence based, community outcomes
- TBI Model Systems and Model Systems Knowledge Translation Center (MSKTC at <http://www.msktc.org>)
 - Tools, factsheets, projects
- Shared information
 - Articles, staffings
- Education
 - Core Competencies, targeted training
- National resources
 - Centers for Disease Control (CDC), National Association of State Head Injury Administrators (NASHIA), BrainLine

Research and Employment

- Employment maintenance and social skills/ supports - **Post employment
- Behavior, Behavior, Behavior
- Associated/secondary health issues
- Older Adults



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Practice Guidelines

How can practice guidelines help VR practitioners support individuals with TBI to return to work?

- Universal, empirically-based standard of care
- Help shape expectations relating to service delivery and outcomes
- Helpful in training vocational professionals and in program development

How can practice guidelines help VR practitioners support individuals with TBI to return to work?

- Implementation of evidence-based practice guidelines improve services by reducing variation in practice and systematizing “best practices”
- Use as educational tools to improve services, serve to reduce errors, and provide consistent quality of services and utilization of resources for individuals with brain injury
- Provide information and assist in decision making
- Improve accountability and facilitate learning and the conducting of research

How can practice guidelines help VR practitioners support individuals with TBI to return to work?

- Helpful for training new staff and giving seasoned staff new ideas, approaches that are proven to be as successful as possible by those already working in the field
- Better services for individuals with brain injury will lead to better outcomes-higher wages, higher satisfaction with employment
- Peripheral benefit of helping those with other disabilities with similar barriers to employment – autism, psychiatric disorders, addiction issues, learning disabilities

What type of information should the practice guidelines include?

- Guidance in addressing complex and challenging situations (e.g., clients with dual diagnosis, stress particularly related to financial limitations, substance abuse pre- and post-employment)
- Principles of practice
- Definitions/descriptions of types of employment services available
- Information on measures of employability and employment outcomes
- Foundational information on brain injury, employment, prognostic factors, and the benefits of approaches to vocational intervention
- Information on the reliability and validity of assessment approaches

What type of information should the practice guidelines include?

- Guidelines on how to address barriers/challenges those with TBI may experience (substance abuse, legal issues, benefits, assistive technology, cognitive deficits, driving after brain injury)
- Interventions found to be successful with the TBI population in existing research (assessment, cognitive rehabilitation, work adjustment training, social skills training, individual psychotherapy....)
- Techniques for job development and job coaching for individuals with TBI to secure and maintain successful employment
- Compensatory strategies to aid the individual in being more independent (home and employment)
- Rehabilitation, vocational, school, and community supports available to individuals with TBI in the community

What type of information should the practice guidelines include?

- General guidelines related to working with individuals with brain injury
- A review of the existing literature on employment practices, barriers, research
- Specific challenges within TBI/ABI – behavior, mental health, substance abuse
- Differences between serving those with brain injury vs. other types of disabilities within the current VR process
- Training/practice guidelines (core competencies) for staff contracted to serve individuals with BI
- Expectations within VR system for defining successful outcomes, job stability and satisfaction
- Techniques for serving those who are employed at the time of their injury for maintaining employment
- Maintaining employment and finding/keeping social supports for employment!

Who should be involved in developing the practice guidelines?

- Persons with brain injury and their family members
- Vocational researchers
- Service providers
- Advocacy organizations
- Government (state, local) agencies

Who should be involved in developing the practice guidelines?

- Vocational Rehabilitation Specialists
- Employment specialist/job coach
- Professional organizations (Brain Injury Association of America...)
- Educators
- Support groups

Who should be involved in developing the practice guidelines?

- TBI Model Systems clinicians
- Teachers
- Neuropsychologists
- A possible survey of these service providers first to ask/determine what their needs are related to such a guide, and what format would work best.

Is there anything or any topic that we haven't discussed that you would like to share with the audience?

Characteristics of successful clients:

- Recognition of personal strengths and limitations
- Patient and persistence
- Ability to accept the inevitability of mistakes and learn from them
- Willingness to solicit help from others and comply with recommendations made

Is there anything or any topic that we haven't discussed that you would like to share with the audience?

- Involving the individual directly in the planning process and maintaining open communication is key in achieving successful employment.
- Providing multiple modalities for learning may be necessary for this population.
- All services should be individualized because individuals differ in their strengths and limitations.
- Individuals who have long-term supports are often most successful.

Is there anything or any topic that we haven't discussed that you would like to share with the audience?

- TBI is a unique disability
- Each individual is different
- No one approach is the most successful
- Customize to each individual's strengths and challenges

Wrapping Up

Thank you for participating!

- We invite you to:
- Provide your input on today's webcast
- Share your thoughts on future webcasts topics
- Participate in the Community of Practice to continue the dialogue
- PLEASE CONTACT US:

ktdrr@sedl.org

Please fill out the brief evaluation form:

www.surveygizmo.com/s3/1844958/TBI-Eval

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