FINAL REPORT

Reducing Recidivism and Improving Return to Work in Ex-offenders with Traumatic Brain Injury through Resource Facilitation

Indiana Traumatic Brain Injury
State Implementation Partnership
Grant Program

September 21, 2018

A. Title Page

Project Title:	Reducing Recidivism and Improving Return to Work in Ex-offenders with Traumatic Brain Injury through Resource Facilitation: Indiana Traumatic Brain Injury State Implementation Partnership Grant Program
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C. EXECUTIVE SUMMARY

C1. Project Purpose and Scope. The over-riding purpose of this project was to determine if Resource Facilitation (RF) would reduce recidivism and improve return to work for ex-offenders with traumatic brain injury (TBI). Our other primary goal was to promote awareness, training and education on TBI in the criminal justice system.

C2. Target Population. Ex-offenders with moderate to severe TBI.

C3. Results/Important Findings and Lessons Learned. Nineteen percent of 1287 ex-offenders screened positive for moderate to severe lifetime exposure to TBI and that those with TBI were significantly more likely to have recidivated six and 12 months post-release as compared to ex-offenders without TBI. We also found that RF significantly reduced the risk of recidivism by nearly 60%. In fact, statistically significantly fewer RF participants recidivated six months post-release compared to 22% of the non-treated group. While not statistically significant, this trend did continue at 12 months post-release with 22% of the RF group recidivating compared with 34% of the non-treated group.

C4. Products Developed. We developed introductory education modules on TBI in the criminal justice system, fact sheets about the effects of TBI, and conducted two state-wide conferences for the criminal justice system on TBI.

C5. Program and policy implications. TBI is a significant risk factor for incarceration and recidivism. TBI screening paired with TBI-specific evidence-based interventions and training may have a significant impact on recidivism.

C6. Recommendations. These findings, while promising, are quite preliminary and additional research is needed to determine efficacy and effectiveness of RF to reduce recidivism.

D. INTRODUCTION

D1. Traumatic Brain Injury (TBI)

Approximately 2.5 million people are hospitalized each year for traumatic brain injury (TBI) in the United States, according to the Centers for Disease Control and Prevention.[1] The Indiana State Department of Health (ISDH) found in 2013 that more than 50,000 Hoosiers suffered a traumatic brain injury (TBI).[2] Further, the prevalence of TBI-related disability in Indiana was found to be 66,410.[3] These findings clearly indicate that Indiana has a significant health care and social burden associated with TBI.

Traumatic brain injury (TBI) can result in a variety of medical, cognitive and neurobehavioral, and/or psychosocial impairments leading to chronic disability lasting throughout the lifetime.[4] The most relevant impairments, from a criminal justice perspective, are cognitive and neurobehavioral impairments, which often are not immediately obvious, are misinterpreted as intentional non-compliance, and are often misdiagnosed as a psychiatric disorder when they are noted. For example, impairments of concentration can result in decreased comprehension of instructions, distractibility and a lack of task persistence.[5] Memory impairments are manifested as forgetting to remember or remembering tasks to be completed. Impairments of executive frontal lobe functions typically result in impairments of problem-solving, failure in generating new behavioral strategies to adapt to change, repeating the same mistakes, and failing to recognize that one's behavior may not be consistent with stated goals or intentions. Frontal lobe impairments can also result in impaired mood and behavioral dysregulation, decreased initiation, and impaired impulse control, leaving people with TBI often easily irritable, or having exaggerated intensity of emotional and behavioral responses, especially anger.

Their moods may rapidly fluctuate without apparent reason. Further, impaired impulse control manifests as the failure to inhibit desires and behaviorally results in inappropriate sexual behavior, theft, and over-consuming (including eating, drinking, and substance abuse). From a psychiatric perspective, individuals with TBI may be diagnosed as having a conduct disorder or as anti-social. All these cognitive and neurobehavioral impairments associated with TBI are typically unrecognized risk factors for incarceration, failed prison adjustment, and increased recidivism.[6]

D2. TBI as a Risk Factor for Incarceration and Recidivism

The Centers for Disease Control (CDC) recently recognized traumatic brain injury (TBI) as a risk factor for incarceration,[7] and research shows 60% of all offenders being released from prison screen positive for TBI. This is extraordinarily high relative to the 8.5% of the non-offender population.[8]

Previous research has shown that TBI during childhood and adolescence can result in an increased risk of concomitant criminality and conduct disorder by 18.7 times,[9] with 24% of TBI subjects committing crimes leading to arrests within a two-year period post-injury,[10] and by five years after the head injury 31% had legal involvement.[11] It is noteworthy that in one study, 83% of positively identified offenders with TBI reported having no initial involvement with the criminal justice system until after their brain injury.[12] People with TBI also commit more violent offenses.[13,14] Additionally, when TBIs occur in children, it can put them at risk for persistent offending[15] and long-term problems of anger, aggression, temper outbursts, and violence.[16]

This relationship with recidivism has been demonstrated in Indiana specifically[17] with results showing that inmates with a history of TBI are at a higher risk of reoffending compared to inmates without a TBI.[18,19]

D3. The Indiana Resource Facilitation Model and History

To date, the Rehabilitation Hospital of Indiana's RF team has made substantial progress through our previous TBI HRSA grants in the development and evaluation of the RF model as applied to vocational rehabilitation outcomes. The Indiana RF model was developed in 2009 by Trexler and colleagues at the Rehabilitation Hospital of Indiana (RHI).[20] RF is an evidence-based TBI-specific service and support navigation process to promote return to work/school and is guided by a team of brain injury rehabilitation professionals, including a neuropsychologist, a clinical rehabilitation therapist, the resource facilitator, and a local support network leader. The resource facilitator provides brain injury specific education and promotes awareness of and access to services and resources for individuals with brain injury, their families, as well as other providers and community supports based on an initial assessment. This proactively helps the individual identify, obtain, and navigate needed instrumental, brain injury-specific, community, and vocational supports to address specific goals. The local support network leader works to ensure collaboration, integration, and coordination between providers and community-based resources, including criminal justice providers, parole, and probation. After the initial evaluation supervised by the neuropsychologist, the team reviews each case in a monthly case conference to ensure progress and goal attainment for each participant with a TBI. The RF Best Practices Manual provides an overview of the background, processes and outcome measurement strategies for this program.

Through RHI's 2009-2014 HRSA TBI grant, the team became interested in the RF model, but noted the absence of empirical outcome data to support its effectiveness. To address this need, Trexler and colleagues conducted the first randomized controlled trial of RF with 22 participants recruited while still in acute brain injury rehabilitation, and were on average, approximately three months post-injury.[21] The participants were randomized to RF or a treatment as usual control group. After six months, 64% of the RF treatment group was successful at returning to competitive employment compared to 36% of the control group ($z = -3.277$, $p < .0001$). While it was found that both groups had reduced level of disability at follow-up ($F = 60.65$, $p < .0001$), it was also found that the interaction for group and time was significant ($F = 9.11$, $p = .007$) indicating that participants who received RF were significantly less disabled at follow-up compared to the control participants.

These findings were replicated in a larger randomized controlled trial that studied 44 participants with acquired brain injury that were again approximately two to three months post-injury. Participants were randomized to 12 months of RF or a treatment as usual control group.[22] The results again demonstrated a significant advantage for the RF group (69%) for both rate of return to work as compared to the control group (50%) as well as time to return to work. Using a logistic regression, group assignment was found to be a significant predictor of vocational outcome (Wald= 4.91, p= .027) and RF participants were found to be seven times more likely to return to productive community-based work as compared to controls (95% confidence interval, 1.25-39.15).

Based on the two publications, Indiana Vocational Rehabilitation Services (IVRS) supported a prospective clinical cohort study of the effectiveness of RF.[23] In this study, the

RF team at RHI provided RF to 210 clients of IVRS and compared their vocational outcomes to the participants in the control groups in the two previous randomized controlled trials. In contrast to our randomized controlled trials, these participants receiving RF were almost 10 years post-injury. Of the 210 participants in the RF treatment group, 69% (n=145) successfully returned to competitive work. Six of these 145 successful outcomes were for participants with a goal of return to post-high school education. When comparing these outcomes for the RF cohort with the outcomes attained by the control groups from the two previous randomized controlled trials, results indicated that 48% (n=16) of the control participants successfully returned to paid employment. The difference between the two groups revealed a significant advantage for the RF group ($X^2_{(1)}$=5.39, p = .018). These results certainly provided evidence for the effectiveness of RF for helping people get back to work after acquired brain injury in a cohort referred to us by IVRS.

Based on the success of the HRSA TBI grants at RHI and the results from the first two randomized controlled trials and prospective clinical cohort study, IVRS decided to support RF for any person with a brain injury who qualified for IVRS in 2014, and RF was made available throughout the state of Indiana by 2015. Today, approximately 350 individuals with acquired brain injury are receiving RF at any given time. However, it is quite noteworthy that more than 700 referrals from the community have been received for RF, the vast majority of which will not qualify for Indiana Vocational Rehabilitation services. It is for these reasons that in Indiana, we need to expand access to RF to promote optimal health outcomes and decrease disability associated with TBI.

D4. Economic Impact of RF in Indiana

Researchers at the Center for Business and Economic Research, Miller College of Business at Ball State University recently completed an economic impact study of RF on Indiana.[24] They demonstrated that the annual aggregate lifetime savings generated as a result of RF for Indiana was $249.1 million a year for wages and benefits, $30.97 million a year for revenue from taxes, $80.1 million a year for savings to SSDI/private disability, $6.6 million a year for SNAP, resulting in a total of $366.77 million in savings a year.

D5. Other Non-Vocational Findings on RF

More recently, the RF research team at RHI has completed a second prospective clinical cohort study[25] of 141 RF participants including some additional measures of disability and their perception of need for services. This cohort demonstrated a 70% return to work rate. The average time since acquired brain injury for the participants in this study was 10.1 years. Participants were asked to complete a measure of activities of daily living scale[26] at enrollment in RF and at discharge. Significant improvement was noted ($p = .000$) at discharge for all subscales of this measure that included self-care, household care, shopping, money management, travel and communication. Further, participants were also asked to complete the Mayo-Portland Adaptability Inventory – 4 (MPAI-4) [27] at enrollment and discharge. The MPAI-4 is a measure of disability specifically for brain injury and in addition to the total score, it has three subscales including: Abilities, e.g., memory, use of hands, balance, communication; Adjustment, e.g., anxiety, depression, family stability; and Participation, e.g., independence with home maintenance, shopping, driving.

After an average of 11.6 months of RF, the participants were significantly less disabled on all subtests of the MPAI-4, demonstrating a significant reduction in level of disability for 141 brain injured participants 10.1 years post-injury with a strong effect size (p=.000).

Participant service utilization and their perceived need for services at enrollment and discharge in this second prospective clinical cohort trial were assessed using the Survey of Unmet Needs and Service Use (SUNSU).[28] This instrument asks participants to first indicate from a list of possible brain injury and instrumental services and supports what services they are currently receiving, and then again, indicate which additional services they perceive they need. Analysis of the pre-post change for these 141 RF participants revealed that the number of services used declined significantly from baseline to discharge (t=2.83, p=.005) over the course of RF and that their desired services declined significantly as well from baseline to discharge (t=13.53, p=.000). These data would appear to suggest that the RF was successful in meeting the perceived needs of individuals with brain injury as well as significantly reducing their level of disability, even though they were more than 10 years post-injury.

A pilot analysis of the impact of RF on utilization of health care services was also completed in preparation for this project. Total number of emergency department (ER) visits, inpatient admissions, and outpatient visits were pulled for 16 RF participants as and 18 control participants. While the sample sizes are obviously small, results indicate that the RF group had fewer ER visits on average (RF = 0.88 vs control = 1.53, p>.05) and fewer inpatient admissions (RF = 1.82 vs control = 4.05, p>.05), though the differences are not statistically significant. The RF group also had higher mean outpatient visits (RF =

27.00 vs control = 12.58, p>.05). The latter finding is not surprising since through the process of assessing needs in the initial phase of RF, RF directs participants to outpatient services and supports. However, these findings provide some preliminary data to suggest that RF may reduce inpatient admissions. Data from a larger sample size is required as these analyses lack adequate power to detect whether the current differences are statistically significant.

These findings appear to suggest that the Indiana RF model is robust and may impact not only vocational outcome, but also potentially reduce disability, decrease perceived need for and use of services, and possibly decrease hospital re-admissions. The present grant was proposed to be an examination of the extent to which the Indiana RF model would decrease recidivism and improve return to work for ex-offenders with TBI.

D6. The Resource Facilitation Model for the Criminal Justice System

To implement the RF model in a criminal justice system, the RF team at RHI partnered with Community Solutions, a not-for profit organization. Community Solutions designed, implemented, and is the backbone support for the Marion County Re-entry Coalition (MCRC). The MCRC brings together representatives of community and faith-based organizations, criminal justice/public safety systems, employers, and advocates to align their actions and strategies, so they can build on each other's strengths to accelerate the impact of their work. A partnership with Public Advocates in Community Re-entry (PACE) was also established to provide transitional services to those individuals being released from prison back into the community. The services included family reunification, transitional housing, substance abuse groups, education, and assistance with job placement.

The initial project design targeted returning citizens in Marion County, the county central to the Indianapolis metropolitan area. The project provided for screening of ex-offenders as they enter Parole in Parole District 3 (Marion County, Indiana) and the Duvall Work Release Center of Marion County Community Corrections. Those who screened positive for moderate to severe brain injury after the first year of screening were offered the opportunity to participate in Resource Facilitation through IVRS. As such, those individuals authorized by IVRS would receive the RF services, including the initial evaluation and approximately 12 months of RF services.

In the first year, we screened individuals for the presence of moderate to severe TBI, but did not provide referral to IVRS for RF. The data for recidivism and return to work were to be used as a comparison group relative to those who would receive RF starting with those that were screened positive for moderate to severe TBI starting in year two of the project. Our methodology was to compare the recidivism and return to work rates for those who received RF as compared to those who did not in year one.

D7. Project Goals

The primary goal of this project was to determine if RF would decrease recidivism and improve return to work for ex-offenders with moderate to severe TBI using a quasi-experimental design where the rates for recidivism and employment for a baseline cohort (year one) were to be compared with a group that received RF (years 2-3).

Secondary goals for this project included designing and implementing brain injury education to key stakeholders who interact with ex-offenders, especially Indiana Department of Corrections (IDOC) personnel, county prosecutors, public defenders and judiciary staff, primary healthcare providers, and human services providers, so that they

might more effectively support the reentry process of those returning citizens who are living with the effects of moderate or severe traumatic brain injury. We also sustained our Indiana TBI Advisory Board during this project with representation from multiple State agencies, other private and public TBI stakeholders, and consumers with TBI and their families.

E. ACTIVITIES AND ACCOMPLISHMENTS

E1. Project Outcomes

E1a. Results for the effectiveness of RF

Screening for TBI

To determine rates of moderate to severe TBI, screening was completed with the OSU-TBI-ID short form which consists of a structured interview designed to identify a history of brain injury as well as basic injury related variables including duration of loss of consciousness as well as age at injury for each injury reported.[29,30] The interview typically takes less than ten minutes to administer. Reliability and validity of the OSU-TBI-ID has been established in the literature[30] and external evaluators during this study also reported on the measure in order to test the accuracy of the following results. See Appendix A.

Parole and Work Release Screening Results

To identify participants for the study, ex-offenders were screened as they entered Parole in Parole District 3 (Marion County, Indiana) and the Duvall Work Release Center of Marion County Community Corrections. Individuals were screened using the OSU-TBI-ID throughout the duration

of the grant with positive year one screenings for moderate to severe TBI reserved as a baseline cohort for collection of data on recidivism and employment after brain injury. Upon completion of year one, positive screening for moderate to severe TBI resulted in referrals to RF.

Baseline TBI Screening Rates from Year One

During the first year of screening, 1287 ex-offenders were screened with nearly 19% of the sample screening positive for a moderate to severe TBI and nearly 8% screening positive for a mild TBI (see Table 1).

Table 1. Baseline Screening Results (Year 1) (n=1287)		
No/Improbable TBI	949	73.7%
Mild TBI	96	7.5%
Moderate to Severe TBI	242	18.8%

TBI Screening Rates for the Treatment Recruitment Portion of the Grant (years 2-4)

During the remaining years of screening, 1504 ex-offenders were screened with 20% of the sample screening positive for a moderate to severe TBI and 8% screening positive for a mild TBI (see Table 2).

Table 2. Screening Results During the Treatment Recruitment Phase (Years 2-4) (n=1504)		
No/Improbable TBI	1086	72.2%
Mild TBI	114	7.6%
Moderate to Severe TBI	304	20.2%

RF Intervention Outcomes

When the project was initially launched, there was system capacity at IVRS to accept the referrals and begin the assessment to determine eligibility and promote access to services to promote returning to work. It was anticipated that this would include support for RF. However, starting in the first year of the project, IVRS experienced a significant staff shortage and also implemented an order of selection process that resulted in long delays (up to 6 months) for initial evaluation at IVRS. During this extended period of time, there was no formal way to keep the ex-offender client connected to services or access to RF. Additionally, clients who are under supervision by Parole or Community Corrections are required to be employed, meaning that many clients were able to find employment in the low-skill, low-wage economy, but may not able to maintain that employment for any period of time. This resulted in clients dropping out of the program or becoming ineligible because they would have secured employment during this time, therefore disqualifying them from IVRS services, even though they had no accommodations in their job for the effects of their TBI. The employment-related challenges faced by the reentry population is not an inability to get a job, but rather one of job retention. The jobs the ex-offenders are able to get are low-wage and often physically demanding and stressful jobs, which are difficult to maintain – especially when one has a brain injury and has not learned coping skills or have access to accommodations that would mitigate the effects of the TBI.

This revolving door of employment is very typical in the ex-offender population, and especially common among individuals who are under supervision in the community.

To address the absence of access to RF services, the project team implemented a core set of the very fundamental elements of the RF services given the staff resources provided through the present grant. These services were implemented beginning March 1, 2016, and dramatically increased the number of program participants. The project team continued to work to connect clients with IVRS, though few referred to IVRS ever became clients of IVRS. Therefore, the treatment intervention was split into three categories consisting of three treatment levels: Resource Facilitation (RF), Modified Resource Facilitation (Mod-RF), and no RF services. It is important to note that participants in all levels were offered TBI information support groups. See Table 3 for an itemization in the differences between the two RF levels of treatment.

Table 3. Levels of RF Services Provided

Resource Facilitation (RF) Processes & Services	Modified RF Processes Services
1) Neuro-Vocational Evaluation (NVE) a) RF Intake with Client and Family b) Evaluation (8 hours) of: i) Cognitive and neurobehavioral functions ii) substance abuse iii) family and social support iv) level of disability v) pain vi) mobility vii) personality and emotional functioning viii) vocational preferences and barriers c) Local Support Network Community Assessment d) Case Conference with Neuropsychologist, RF, LSN, and Clinical Rehabilitation Therapist e) Comprehensive Report **2) Resource Facilitation Services** a) Community based contact with RF every two weeks on average for 12 months: facilitating resource acquisition, providing education to client, family and providers, ongoing monitoring of success of resources, modification to plan as needed, collaboration and integration of treatment plans b) Navigation to multiple community services and supports (i.e., housing, medical services, brain injury services, support groups, others) and management-coordination of services for co-morbidities and co-occurring conditions (e.g., mental health, substance abuse) c) Monthly case conference with Neuropsychologist, LSN, RF and Clinical Rehabilitation Therapist d) Monthly documentation e) LSN collaboration with Employment Specialist/Job Coach/prospective employer f) Vocational Placement Services – LSN and RF services provided during placement g) 90-day vocational stabilization – LSN and RF continue to provide services h) At close of 90 days – RF review and stabilization of resources, satisfaction surveys, program evaluation data collection **i)** At close of 90 days: resource review and stabilization of resources, satisfaction surveys, data collection	**1) Evaluation** a) OSU screening b) RF Intake with Client c) Evaluation (one hour) of: i) Cognitive and neurobehavioral functions ii) Case Conference with RF and Neuropsychologist **2) Resource Facilitation** a) TBI Education Group (one time a week) b) TBI Life Skills Group (one time a week) c) TBI Career Networking Group (one time a week) d) Individual RF follow-up e) Possible referral to IVRS f) Emergency assistance (bus tickets, food, housing, etc.) g) Clients invited to continue in general case management services at community-based provider (PACE), if desired

Ultimately, of the 1504 ex-offenders screened during the treatment recruitment phase, 304 (20%) screened positive for moderate to severe TBI. Of the 304, 48 (16%) participated in one of the three treatment groups described above. The RF treatment groups combined consisted of 31 offenders (8 in RF and 23 in Modified-RF) and 17 offenders only participating in support groups.

The Effect of TBI on Recidivism

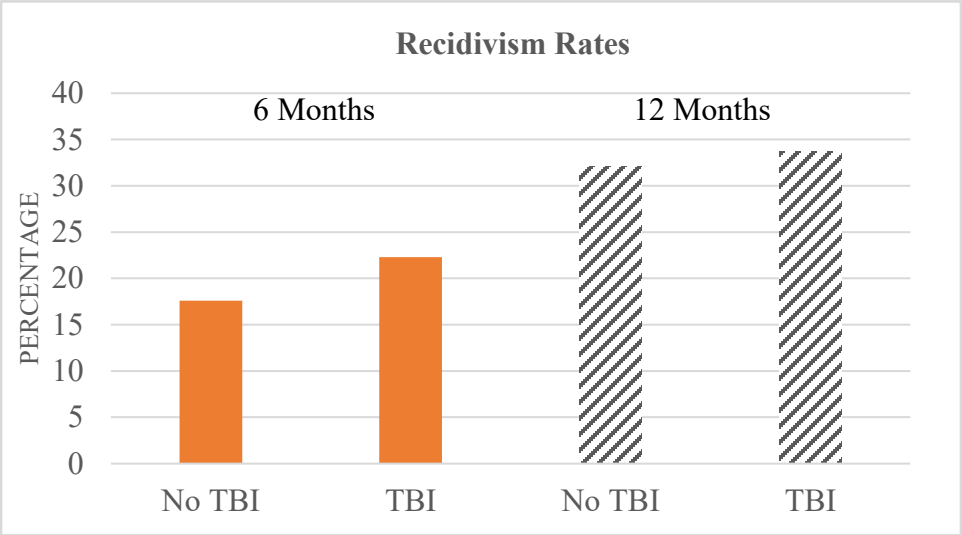
Recidivism data was collected on all screened offenders during the project. Offenders screened the first year, phase I, were not referred for treatment, but were still followed for recidivism data with the goal of using this cohort as a baseline comparison group. Offenders screened in the following years, phase II, were referred to one of the RF treatments if they screened positive for a moderate to severe TBI with all offenders (with or without brain injuries) being followed for recidivism data. Recidivism data was collected from IDOC six months after the offenders screening date as well as 12 months after screening regardless of project phase. One weakness of this design involves the sample screened during phase I. Parole officers were instructed to screen every active parolee on their caseload, which included people who had already been on parole for some time and were therefore less likely to return to IDOC (as they had already passed the first 6 months, which is the highest risk period for recidivism). More specifically, regardless of brain injury history, the entire baseline sample had a six month return to IDOC rate of only 5.4%. Additionally, a change in policy between phases I and II resulted in an increase in the number of returns to IDOC for technical rule violations (rather than offender behaviors). Therefore, the recidivism rate in phase

I is much lower than the expected recidivism rate for IDOC and less generalizable to the recidivism rate identified in phase II. It is worth noting that the Marion County Re-entry Coalition reported that 24.2% of all people released in 2016 recidivated to IDOC within six months. Therefore, this cohort could not be used as a true comparison group. However, rates between offenders with a history of brain injury and offenders without a history of brain injury were compared as a preliminary analysis of recidivism across brain injury groups.

In this phase I sample, 1287 offenders were screened for a history of TBI with 242 indicating moderate to severe brain injury and 949 indicating no history of brain injury. Ninety-six reported mild brain injuries and were therefore excluded from the analyses since they were not reporting moderate to severe brain injury cases, but did technically have a history of brain injury and could possibly exhibit some of the symptoms of brain injury resulting in unnecessary variance. Of the 242 moderate to severe cases, 21 (8.7%) returned to IDOC within six months and 42 (17.4%) returned to IDOC within 12 months. In comparison, of the 949 cases with no history of TBI, 45 (4.7%) returned to IDOC within six months and 123 (13.0%) returned within 12 months. The differences in proportions returning to IDOC between those with and without brain injury were statistically significant (1-tailed) at six months ($z=2.39$, $p=.008$) and twelve months ($z=1.77$, $p=.038$) indicating a significantly higher rate for those with a history of moderate to severe brain injury. In fact, those with TBI were nearly two times more likely to recidivate than those without TBI. This is believed to be conservative since many

of these cases are not "higher-risk" recidivism cases since they were existing parole cases outside of the six month window of highest risk.

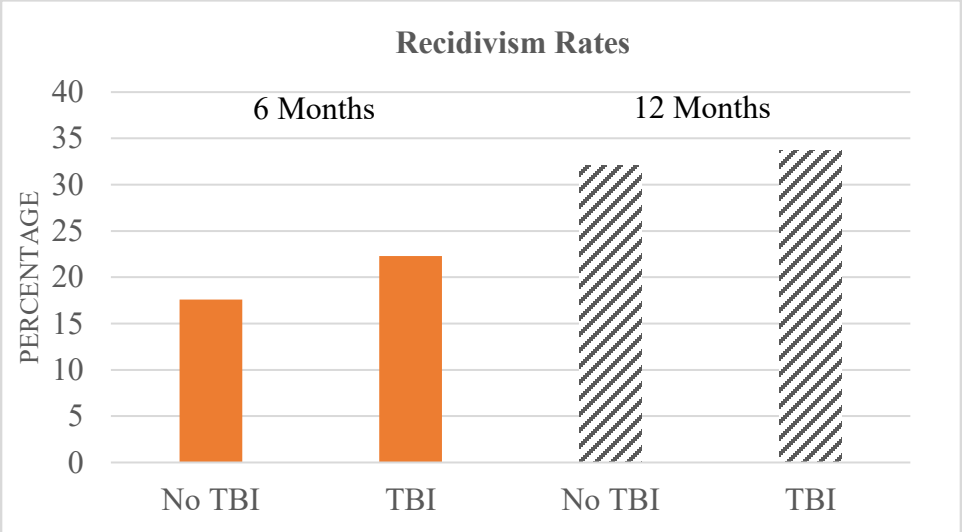
Figure 1. Phase I Recidivism Rates Comparison at 6 and 12 Months



When looking at Phase II data, which includes RF treatment group participants, offenders with TBI were still showing elevated rates of return to IDOC at both six and 12 month time points, however, the proportions were no longer significantly different perhaps due to implementation of the RF intervention and brain injury education provided within the IDOC at this time. More specifically, of the 304 moderate to severe cases, 64 (20.2%) returned to DOC within six months and 99 (32.6%) returned to IDOC within 12 months. In comparison, of the 1088 cases with no history of TBI, 192 (17.6%) returned to IDOC within six months and 349 (32.1%) returned within 12 months. In order to remove potential confounders, the proportions in the two groups were compared again between those reporting moderate to severe brain injury and those reporting no brain injury while excluding those who enrolled in the RF intervention. Upon

removing the 31 RF treatment participants, 61 (22.3%) out of the remaining 273 moderate to severe TBI cases returned to IDOC within six months and 93 (33.7%) returned within twelve months. When comparing the six month return to IDOC rates between moderate to severe TBI (22.3%) and no TBI (17.6%), statistically significant differences (1-tailed) were detected indicating a higher return to IDOC rate for those reporting a moderate to severe brain injury and not participating in RF (z=1.78, p=.038) However the differences in proportions at 12 months were not statistically significant with the TBI sample (33.7%) and the non-brain injured sample (32.1%) showing similar rates (z=.512, p=.305). See Figure 2.

Figure 2. Phase II Recidivism Rates Comparison at 6 and 12 Months

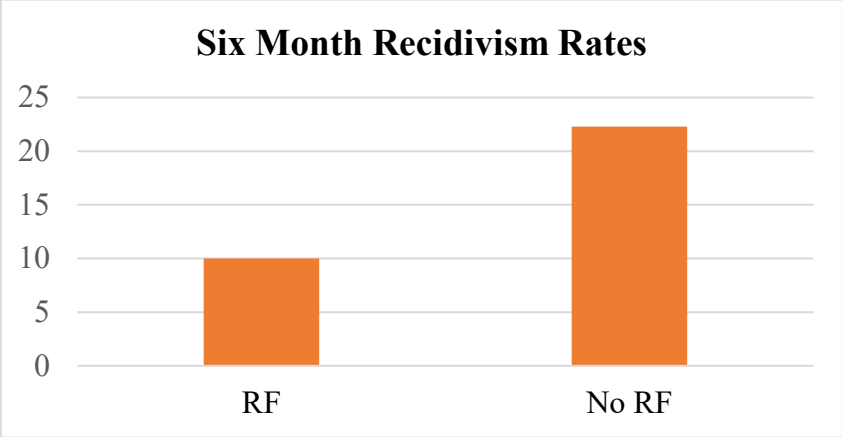


Impact of RF on Recidivism

During years two through four, 31 offenders were offered and participated in the RF intervention (out of the 304 who screened positive for moderate to severe TBI) resulting with eight in RF and 23 in Modified-RF. Due to the small sample sizes, data in the two RF interventions were combined and considered "RF

treatment." As previously mentioned, the year one baseline data was deemed inappropriate as a comparison group and therefore, those screening positive for moderate to severe TBI during years two through four and not participating in RF were treated as a comparison group. Again, these comparisons should be treated as preliminary as assignment to the RF intervention was not random and rather based on voluntary enrollment. When looking at rates of recidivism six months post release, it is apparent that a significantly smaller proportion returned to the IDOC from the RF treatment group than the comparison group with only three of the 31 RF participants (10%) returning to IDOC compared to previously mentioned 61 (22.3%) of the phase II moderate to severe TBI cases not participating in RF ($z = 1.64$, $p=.05$; 1-tailed). In fact, offenders with TBI not receiving the RF intervention demonstrated a six month return to IDOC risk nearly two and half times higher than the treatment group, demonstrating that the RF intervention cut the risk of recidivism for brain injury survivors in this sample by nearly 60%. When looking at the difference in proportions at 12 months, seven (22.6%) RF treatment participants returned to IDOC compared to 92 (33.7%) in the comparison group. These proportions are not statistically different ($z=1.25$, $p=.10$), though the low p-value indicates a potential trend and possibly an under-powered analysis due to the small sample size. See figure 3. These results were also presented as a press-release which is available in Appendix B.

Figure 3. The Impact of RF on Recidivism



These preliminary data are promising, yet more work still needs to be done to replicate the findings and check maintenance effects. Many of our participants reported that these interventions were the first that they had received interventions for their TBI, and many also reported that they were not aware of the cognitive and neurobehavioral impairments associated with their TBI, or the relevance of their impairments to the reason for their incarceration. In general, and not surprisingly, these findings would suggest that provided ex-offenders with TBI-specific evidence-based services positively affects recidivism. However, initial longitudinal analyses reveal the need for a larger treatment group sample size.

RF and Employment Outcomes

Employment data was also to be collected as an outcome variable for the treatment group. It was hypothesized that the treatment group would show better employment rates than the non-treatment group and that those with employment would be less likely to recidivate. However, external factors had an impact on the data that was available for the outcome analyses. Duvall Residential Facility changed vendors for their data management system during the project, and it was

not possible to access the employment data stored in the old system as originally designed. Duvall employees are still working to access the data with help from the former vendor, but the data were not yet ready for analysis at the time of the production of this report.

E1b. Results for Brain Injury Training and Education

Seven brain injury training modules were created for IDOC staff during the first year of the project to help staff learn about the consequences and behaviors related to brain injury (see Appendix I). The modules included: An introduction to Brain Neuroanatomy, Agitation and ABI, Cognition after BI- Part 1, Cognition after BI- Part 2, Emotional Problems after BI, NeuroBehavioral Problems- Part 1, and NeuroBehavioral Problems- Part 2. Throughout the duration of the project, the entire staff of the IDOC, approximately 6000 employees, were trained and required to pass an exam following each module. Staff failing the exam were required to return to the module until successfully passing the exam. These modules have also been uploaded into the IDOC learning platform so that now all new employees can complete the TBI learning modules.

We also provided face-to-face training and education to almost 700 criminal justice professionals through the present project (see E5. Communication and Dissemination). This training was provided to a range of professionals within and related to the criminal justice system including multiple judges, prosecutors, criminal defense attorneys, probation officers, post-release providers, health and mental health providers, IDOC staff, among others. We also organized and conducted a one-day conference and a two-day conference (see Appendix J for the

agendas, programs, and conference flyers). A detailed listing of all of the education and training provided is listed in the section: E5. Communication and Dissemination.

E1c. Screening for TBI among Veterans in a Medium Security Prison

During the course of the grant, we also decided to conduct TBI screening in a variety of other criminal justice settings given the significant prevalence of TBI we were finding coming in parole and community corrections. We determined that it might be the case that a medium security prison with a high veteran population may demonstrate high brain injury rates.

We screened 39 veterans at Putnamville Correctional Facility, and of those, we found that 67% screened positive for moderate to severe TBI. We were not aware of any other report of this level of TBI for moderate to severe TBI in the literature. Further, during the course of screening these veterans, it became obvious that many of those screening positive for moderate to severe TBI had never received any rehabilitation services for the cognitive and neurobehavioral consequences of their injury. It also became obvious that many of them were not even particularly aware of the presence of TBI-related impairments. As a consequence, we decided to test the feasibility of providing an evidence-based group intervention that the brain injury clinical research team at RHI developed in 2010.

E1d. Results for Preliminary Evaluation of the Feasibility of Providing the Brain Injury Coping Skills Group in Two Indiana Correctional Facilities

The Brain Injury Coping Skills (BICS) was developed at RHI by Drs. Backhaus and Ibarra through research and clinical trials in order to provide

patients and caregivers greater support and teach adaptive coping strategies.[31-32] BICS is a 12 session (one session per week), manualized, cognitive-behavioral treatment group designed to provide support, coping skills, and psychoeducation aimed to improve perceived self-efficacy (PSE) and emotional functioning. Perceived self-efficacy is the belief or confidence in one's ability to deal with the challenges related to a specific situation (e.g., brain injury). PSE has been found to be strongly linked to social participation, increased positive regard toward the caregiving role, and was found to be the greatest contributing factor to predicting life satisfaction.[33,34] In fact, one study has recently shown that the greatest contribution to predicting life satisfaction after brain injury was the person's PSE for managing their cognitive challenges.[35]

The original BICS study investigated 20 survivors and 20 caregivers from baseline through three months post treatment. It was a randomized-controlled trial (RCT) with the control group receiving treatment as usual (no placebo intervention). Analyses revealed that the BICS group participants showed significantly improved PSE compared with the control group participants immediately post-treatment and maintained this through follow-up. To further test the efficacy of BICS, a second study was designed to compare BICS to a self-directed support group[36] allowing for a control condition structurally equivalent to BICS. In this study, participants were randomized to the BICS group or the self-directed group. While both groups showed significantly improved PSE between baseline and post-treatment, only the BICS group showed greater stabilization of change six months post treatment, as well as significant reductions in impulsivity,

anger dyscontrol, and emotional outbursts. Since the publication of the BICS studies, clinicians have adopted the protocol nationally, including Mayo Clinic, allowing for widespread access to this evidence-based intervention.

Incarcerated offenders with a confirmed history of prior military service (regardless of discharge status), and with a scheduled release date within the calendar year, who screened positive for a lifetime exposure of moderate to severe TBI using the OSU-TBI-ID were given the opportunity to participate in a modified version of the BICS Group, called BICS-VETS. Participants in BICS-VETS covered 4 educational modules over the course of 8 weekly sessions, each lasting for 2 hours. These modules included: 1) Brain Injury and Its Effects, 2) Depression and Anxiety after Brain Injury, 3) Recovery Definitions, Expectations, and Strengthening Factors, and 4) Stress Management Skills. The information in these modules is fundamentally unchanged from the evidence-based BICS protocol. However, in a correctional setting, which offers no opportunity for caregiver or family participation and no access to audio/visual illustrations, the overall length of the intervention was able to be condensed down from the typical 15 sessions to the aforementioned 8. It was also decided to offer BICS-VETS at another correctional facility, specifically the Edinburgh Correctional Facility, as this later facility is a minimum security prison, but also includes a large proportion of veterans.

While it was clear that the veterans we screened had a remarkably high rate of moderate and severe TBI, we did not know the extent to which this history of TBI was still affecting their day to day adjustment. We therefore decided to administer a measure of executive functions as part of the BICS-VETS intake

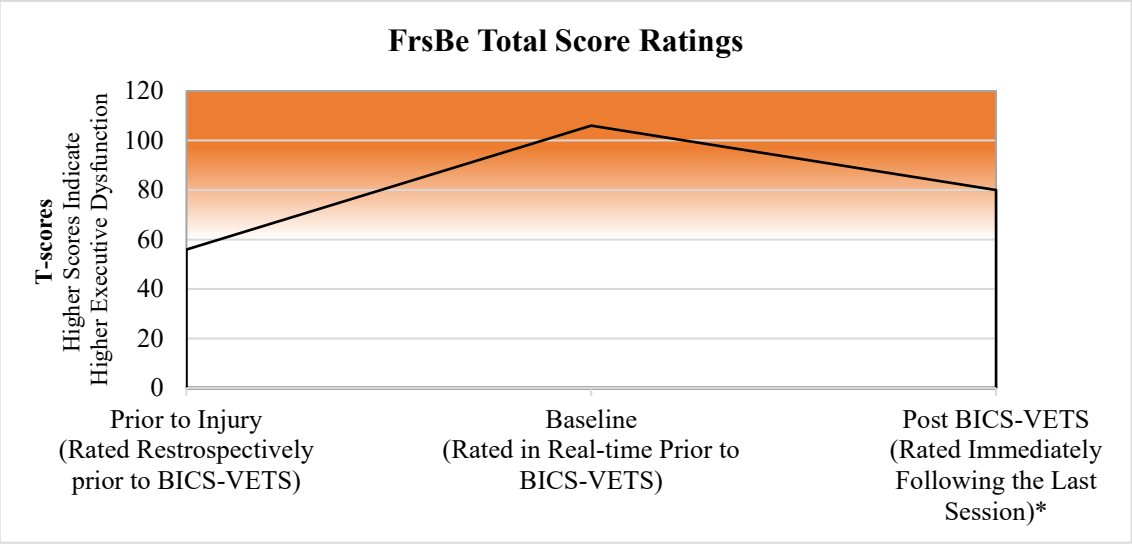
process using the Frontal Systems Behavioral Scale (FrSBe).[37] The FrSBe measure is a behavioral assessment measuring damage to the frontal lobes across three domains: Apathy, Disinhibition, and Executive Dysfunction. When completing the FrSBe, participants are asked to first rate their behavior prior to their brain injury retrospectively, and then rate the same items again, but assessing their behavior over the last two weeks. Scores range from 40 to 130 and scores above 65 are indicative of executive dysfunction. BICS-VETS post-treatment data on the FrSBe were also collected for the participants in the Putnamville group (n=10). Also, participants at Putnamville were asked to complete post-treatment questionnaires to study the participants' satisfaction with the group. We also asked group participants for comments about their experience with BICS-**VETS.**

Between April 2017 and May 2018, four BICS-VET groups were provided (two at each facility). The total number of participants in each group ranged from four to eight, resulting in a combined total of 25 BICS-VETS participants. Participants were all male and ranged in age from 28 to 66 with an average age of 48 years (sd=11.53 years). On average, the participants had 11.66 years of education (sd = 1.44) ranging from 9 to 14 years. Most of the sample was white (20 out of 25, or 80%), four were black and one was Hispanic. Moderate to severe brain injury was required for admission into the group, but 88% of the group participants reported three or more brain injuries during their initial OSU-TBI-ID interview.

Examination of the data on preinjury executive dysfunction revealed that the participants rated their day to day executive functions as within normal limits, as

indicated by the group mean standardized score of 58 (see Figure 4). However, when rating their behavior over the last two weeks, the group participants had an average standard score of 106, indicating severe executive dysfunction and statistically significant (negative) change in perception of executive functions (t=1.86, p=.039) relative to preinjury level of executive functioning. Immediately after BICS-VETS, for those with post treatment FrSBe data, the group average declined to a standardized score of 80, consistent with mild to moderate level of impairment. This difference was not tested statistically due to the large proportion of missing data, but does indicate a possible trend for further investigation.

Figure 4. Changes in Perceived Executive Functions



Satisfaction results indicated that 100% of the participants reported high satisfaction with the group. Additionally, 85% indicated that after learning about the consequences of brain injury, they felt that their symptoms were related to their cause for incarceration. Quotes from the feedback form are provided in table 4 below.

Table 4. BICS-VETS Participant Feedback

Did the effects of your brain injury have anything to do with getting in trouble with the law? If so, how?	• "Effected my personality—I became impulse and mad bad choices without thinking things through." • "Yes because I couldn't make rational decisions." • "Character change/Impulsiveness/Traumatic experiences while in combat." • "Impulse control, emotional instability cause me to act out and make poor decisions." • "The stress levels I had caused me to drink more."
What has it been like for you to be in these groups? What is the most important thing you learned?	• "The connection between TBI and my impulsivity has <u>always</u> been on my mind, this group validated my ideas, as well as educated on things I did not know." • "How to recognize triggers also how to conduct critical thinking." • "It was nice learning how the brain works." • "I learned the importance of moving forward in my recovery of brain injury regardless of when and how such occurred; whether from some psychical event like car wreck or abusing drugs and alcohol." • "How to work through my problems and to think things through all the way!" • "Better techniques on how to cope with my injury." • "Coping skills" • "That I have a problem." • "It gave me a chance to be open about my issues. The most important thing was to know that I have a brain injury." • "To stay focused and stick to reason at hand."

While entirely preliminary, these data suggest that the perceived level of cognitive and neurobehavioral impairment for this group of veterans who screened positive for moderate to severe TBI was consistent with severe disability, and therefore having a significant impact on their day to day adaptation. This level of

disability would very likely continue to affect their adaptation post-release, and likely play a role in recidivism. Their experience with BICS-VETS supports the value and feasibility of providing this intervention to incarcerated veterans. The very preliminary and uncontrolled findings from the FrSBe and their comments appear to suggest that the veterans perceived a meaningful change in their day to day functioning after BICS-VETS. These results however only demonstrate a need for further investigation into the potential benefits of BICS-VETS, and the durability of those possible benefits post-release

E1e. Results for TBI Screening in the Problem-Solving Courts

It was determined through the course of the grant, that it was also important to determine the prevalence of TBI in other criminal justice settings. Problem-solving courts are relatively new to Indiana and were designed for offenders with specific needs or problems with the intention of benefiting both the offender and the community. Specific courts include women's drug treatment, men's drug treatment, mental health, HEAT parole, re-entry, and veteran's court. Participants were screened as part of a partnership with RHI to improve brain injury awareness within the Marion County Court system. All offenders entering the specialty courts were screened between August and October 2016 resulting in 187 completed assessments (see Table 5). All interviews were completed in-person by the same RHI research associate in a private area within the Marion County City-County building.

Table 5. Number of Interviews Completed by Court

	Number of Interviews completed	Percent of Sample
HEAT Parole	15	8%
Drug Treatment (Men)	41	22%
Drug Treatment (Women)	53	28%
Mental Health Court	13	7%
Re-entry Court	44	24%
Veteran's Court	21	11%

We were able to obtain age for some of the offenders, but not all. It is not known how representative these results are therefore as no additional samples from these courts screened to determine reliability of these findings, and as such, these findings are preliminary. The average age of offender with age reported was 35.91 (±8.83) across all courts with average ages ranging from 28.83 to 39.36 between courts (see Table 6). These data would suggest that there was remarkably little variability between types of problem-solving courts in terms of age, and little variability between those with and without brain injury.

Table 6. Prevalence of TBI within the Problem-solving Courts

	HEAT	Men's Drug	Women's Drug	Mental Health	Re-entry	Veterans	Combined
	n=15	n=41	n=55	n=13	n=44	n=21	n=189
Frequency (% of total screened in each court)							
Mod/Severe	3 (20%)	19 (46%)	22 (40%)	8 (61%)	19 (43%)	18 (86%)	89 (47%)
Mild	0 (0%)	0 (0%)	5 (9%)	1 (8%)	2 (5%)	0 (0%)	8 (4%)
Improbable/ No TBI	12 (80%)	22 (54%)	28 (51%)	4 (31%)	23 (52%)	3 (14%)	92 (49%)

In addition to the OSU-TBI-ID standard items, a supplement was added to test for the prevalence of acquired brain injury (ABI) as well. ABIs often occur as a result of strokes and drug overdoses and lead to the same difficulties post injury as a TBI. The severity level of an ABI is not typically stratified into mild, moderate, and severe like TBI, but it is generally acceptable to consider ABI as moderate to severe. Therefore, Table 7 provides the prevalence of TBI and ABI in the various problem-solving courts. These results reveal that approximately 47% of all problem-solving court participants screened positive for moderate to severe brain injury when including ABI and that 49% screened negative. Remarkably, only 4% screened positive for mild TBI.

Table 7. Prevalence of TBI and ABI Combined within the Problem-solving Courts

	HEAT	**Men's Drug Tx**	**Women's Drug Tx**	**Mental Health**	**Re-entry**	**Veteran**	**Combined**
	n=15	n=41	n=55	n=13	n=44	n=21	n=189
Frequency (% of total screened in each court)							
Mod/Severe TBI and ABI	5 (33%)	18 (44%)	20 (36%)	5 (38%)	15 (34%)	19 (90%)	82 (43%)

The low rate of mild brain injuries in this sample is an unexpected finding. In the general population and most brain injury literature, rates of mild brain injury are consistently higher than moderate to severe brain injury rates. It has been reported that mild TBI represents 80% of hospital admissions for TBI, and moderate and severe TBI were each found to be 10%.[36]

E.2. Challenges

The project encountered multiple unanticipated challenges to implementing and providing access to RF services for ex-offenders with TBI.

E2a. Access to RF Services

The most substantial challenge to the present project came from a significant decrease in access to services through IVRS. Based on this barrier, the project team implemented a modified version of RF that was feasible within the resources available through the funding provided in this grant.

E2b. Accessibility of the Clients

There were also significant challenges in accessibility of the clients to RF services in the criminal justice system relative to our experience with the vocational rehabilitation population. This project was designed to first encounter people when they were released from incarceration and on community supervision (either parole or work release), a time during which they are facing many challenges and competing demands. Suddenly, they must find housing, employment, and resources to pay living expenses and the many fees associated with being under supervision. Their parole officer or work release case manager will initially develop a "reentry plan" with them, which is focused on meeting basic needs (employment, housing, compliance with conditions of release) as quickly as possible. In many cases, the screening provided by Parole or PACE was the first time the individual had ever been told that he may be living with the effects of a brain injury. The client, who may have been living with their brain injury for years, has to prioritize finding immediate employment and addressing the issues in their reentry plan, and addressing the effects of a chronic TBI was in many cases not their first priority.

Additional instrumental challenges for the clients included:

a) Clients had to sign in and out of the residential facility which was often difficult for a variety of reasons

b) Transportation to PACE, where RF services were available, was challenging,

c) Criminal justice personnel inconsistently bought into the needs of the person with TBI or their need for services, and

d) Clients did not have access to communication or unreliable communication (no cell phones, changed phone numbers, frequently changed addresses, etc.) so arranging and coordinating service was very difficult.

E2c. Co-morbidities and Co-occurring Conditions

The participants in this project faced major challenges associated with their diagnosis and the social system in which they were participating. Many had significant health conditions, including difficulties with sleep hygiene, lack of access to healthy food, lack of access to physicians (no funding, insurance, access) and even basic medication needs, let alone to needs related to TBI. Major medical conditions were unaddressed or inconsistently addressed, including diabetes, neurogenic bladder, blood pressure, cardiac issues, among others. Mental health conditions were also inconsistently managed, not managed, incorrectly diagnosed, and participants often had no access or at least inconsistent access to medications. In almost all cases, prior to the screening for TBI provided through the current project, TBI wasn't a known or a recognized diagnosis. A substantial number of

the participants had mental health diagnoses, and since we were not able to adequately evaluate the participants, we were not able to provide differential diagnoses for mental health versus TBI-related neurobehavioral disorders, or both. Consistent with the literature, many of the participants with TBI also had a history of or co-occurring substance abuse disorders. Certainly, dual diagnoses of TBI and substance abuse disorders were never addressed, and the substance abuse led to recidivism or parole violations.

E2d. Environmental Challenges

The environmental challenges our participants faced included typical criminogenic variables such as poor living environments and situations (moving in with families who deal drugs, have addictions, behavior problems), lack of support to participate in abstinence, and negative social modeling and reinforcement. Our participants were also challenged however by a lack of access to TBI-specific services. Their families were typically unaware of the TBI or the effects of their TBI, and attributed TBI-related behavioral disturbances to either psychiatric illness or negative character labels. These circumstances certainly provide substantive challenges to positive behavior change, particularly in context of the effects of TBI, which are not changed willfully or without proper diagnosis and rehabilitation.

E2e. Systemic Barriers

The entity in community corrections were employment data were maintained for participants in this project were not aware that this project was reliant on their data. Additionally, the principle investigator in the present project was not aware

that this organization was changing their data management system in which employment data was being maintained, nor that access to these data would no longer be available. Despite multiple attempts to retrieve these data, barriers within and between different organizations prevented access.

E2f. Attitudinal Barriers

One of the ubiquitous challenges for people with TBI and those who are serving them is that most people with TBI do not appear to have any obvious disability. As a consequence, their disability, especially their behavioral impairments, are attributed to willful misbehavior, pre-injury characteristics, or psychiatric illness. While it is certainly the case that people with TBI can have non-TBI criminogenic risk factors as well as anti-social personalities, certainly not all of them do, and during the course of this project, we encountered some individuals from many different sectors of the criminal justice system and organizations that serve it who essentially regarded the effects of TBI as "just another excuse." However, ignoring the effects of TBI on behavior is analogous to ignoring paresis following stroke, and therefore regarding impaired ambulation as "just another excuse."

E3. Impact and Lessons Learned

The results obtained herein with respect to the impact of RF on recidivism are the first to be reported, and we will be preparing them for submission of publication in a peer reviewed professional journal. The results from the RF intervention are promising, and certainly justify more methodologically rigorous research. Hopefully, future research will provide more support for effective TBI-specific interventions to prevent recidivism, and

perhaps even prevent criminality in at-risk people with TBI before it happens. We cannot measure the impact of the increased awareness and education in Indiana, but we believe that TBI is now a much more frequent part of the conversation in the criminal justice system, particularly as witnessed by the multiple efforts to sustain this work.

Through the work and collaboration during this project, it became apparent that large gaps exist between state agencies, DOC, and the healthcare system ultimately causing delays, lack of services, and lack of offender engagement. Many factors seem to contribute to the gaps including different system vernaculars, goals, and priorities. Additionally, it became quickly apparent that offender trust and rapport with staff is critical for engagement and program participation. In fact, brain injury screening rates were even impacted. When questioned, offenders reported less when they were not comfortable with the interviewer or felt that the interviewer could impose any time of change or punishment based on results. Linking ex-offenders to formal systems is challenging and requires close collaboration across agencies, participants, and shared service delivery models. Managing and coordinating social, governmental, and organizational differences and changes are significant challenges. These entities are likely to have very different levels of knowledge and beliefs about TBI, and the vernacular that is used is often different between social sectors and organizations. Ensuring a very clear and common understanding of roles is an essential priority in this type of research and systems change project. Letters of commitment that are obtained prior to the beginning of these types of projects should be very specific to reflect these roles, project management structure, and address the commitment of that entity to the project. It is important to establish objective benchmarks for each participating organization that are routinely

measured and reported to promote accountability and transparency as well as integration across different organizational sectors to serve the project goals and prevent regression into organizational sectors or silos. Last, it is clear that it is essential to, from the beginning, ensure that sources of data that are integral the project will be available throughout the course of the project through a letter of agreement.

In conclusion, we believe that we mitigated some substantial barriers to still achieve the vast majority of the project goals, and achieved an essential first step in examining the potential impact of an evidence-based intervention for TBI on recidivism. Preliminary evidence derived through the work in this project establishes the need for further research, systems change, and policy development.

E4. Sustainability

There are many opportunities for clinical research, systems change, and new policy for TBI in the criminal justice system. If reality, these issues are in the very preliminary stage of development and unawareness of TBI as a risk factor for incarceration is still prevalent. It is clear however from previous research that TBI is a very significant risk factor for incarceration, and now also, for recidivism.

The evidence for the efficacy and effectiveness for RF to improve return to work after brain injury has been well established through previous HRSA grants. The evidence for the effectiveness of RF to prevent recidivism attained through the present grant is very preliminary, but promising. We have several initiatives to sustain this work.

RHI was recently funded by Administration for Community Living for the TBI State Partnership Program Mentor State Grant through the Indiana State Department of Health to continue this line of research. In this case, we will perform a randomized

controlled trial of RF where the primary aim is to improve health outcomes, but one of the secondary aims is to prevent incarceration after TBI. In this project, we will be partnering with the Marion County Problem-solving courts, the Marion County Prosecutor's as well as the Public Defenders offices to address diversion to appropriate TBI treatment when the reason for arrest appears TBI related. We will also collaborate with offender re-entry programs to provide an integrated care continuum as appropriate for each case. This research will provide a more rigorous experimental examination of the efficacy of RF to prevent incarceration. Further, in our new Indiana TBI State Advisory Board, we have a Criminal Justice Task Force that will be led by the Project Director in the current grant.

We have also submitted a grant to the Department of Justice that would provide for a large randomized controlled trial of RF based on the model developed within the current project. In this grant, we will screen veterans in the IDOC for moderate to severe TBI, and for those who do, provide BICS-VETS prior to release. Immediately prior to release, participants will be randomly assigned to RF or follow-up as usual group conditions. Those assigned to RF will be followed for one year, with a three-month follow-up.

There are other initiatives in progress to address TBI in the criminal justice system at various levels of government in Indiana that are in progress as a consequence of the present grant. Indiana and RHI have now established a commitment, and will continue to commit to improving outcomes for people with TBI in the criminal justice system, as well as attempt to prevent their incarceration in the first place.

E5. Communication and Dissemination

Communication and dissemination of information was a high priority of this project. In fact, a key outcome of this initiative was cross-sector education and training to build the

capacity of those who serve ex-offenders with brain injury to recognize signs and symptoms and respond accordingly. The following in-person trainings were completed on behalf of this project can be found in Table 8.

Table 8. Formal training on TBI in the criminal justice system

Forum	Presentation Title	Date	Target Audience	Audience Size
Indiana IDOC and Brain Injury Conference	Reducing Recidivism and Improving Return to Work in Ex-offenders with Brain Injury: Traumatic Brain Injury State Implementation Partnership Grant Program	9/17/2015	IDOC frontline and administrative staff	130
National Association of State Head Injury Administrators (NASHIA) BI and Juvenile Justice Workshop	Indiana's HRSA-funded BI Project – Addressing TBI among Ex-Offenders	8/16/2016	HRSA Grantees from across the country whose projects include CJ-related initiatives	25
National Association of State Head Injury Administrators (NASHIA) 27th Annual State of the States in Head Injury Conference	Juvenile Justice Follow Up	9/12/2016-9/15/2016	Head Injury professionals from across the United States	50
Indiana Addiction Recovery Month Symposium (IN ARMS)	Understanding Traumatic Brain Injury (TBI) and Efforts to Aid Ex-Offenders Living with TBI	9/27/2016	Case managers and mental health professionals who work with people with addictions	50
Marion County Reentry Coalition (MCRC) Annual Conference	Understanding Traumatic Brain Injury (TBI) and Efforts to Aid Ex-Offenders Living with TBI	10/18/2016	Case managers, parole and probation officers, and court staff who work with returning citizens	40

Indianapolis Case Management Institute (ICMI) Alumni Network	Understanding Traumatic Brain Injury (TBI) and Efforts to Aid Ex-Offenders Living with TBI	11/10/2016	Case managers who work in social services organizations that provide services for ex-offenders (half-day interactive training)	5
Brain Injury in the Criminal Justice System Conference	Sessions Include: • Brain Injury (BI) 101 • BI and Criminality • Screening for BI • Medical Aspects of TBI • Neuropharmacology in BI • Psychological and Behavioral Aspects of BI • Behavioral Management of BI • Issues in Post-Release Planning for People • with BI • Next Steps in Management of BI in the Criminal Justice System	6/27/2017-6/28/2017	Parole Officers, Public Defenders, Prosecutors, Judges, IDOC representatives, Medical/psychological services providers to IDOC	250
Indiana Criminal Justice Association (ICJA) Regional Conference	Understanding Traumatic Brain Injury (TBI) and the Impact on Successful Reentry	7/25/2017	Parole and Probation staff serving Central Indiana	70
Marion County Reentry Coalition (MCRC) Annual Conference	Understanding Traumatic Brain Injury (TBI) and Efforts to Aid Ex-Offenders Living with TBI	10/17/2017	Case managers, parole and probation officers, and court staff who work with returning citizens	40
Marion County Reentry Coalition (MCRC) Annual Conference	Screening and Referral for Ex-Offenders Living with Acquired Brain Injury	10/17/2017	Marion County Reentry Coalition (MCRC) Annual Conference	35

Additionally, a series of webinar trainings were developed and recorded, for all IDOC employees to complete as part of their mandatory annual training. The topics featured in that series include an overview of neurobehavioral problems, especially the

impact of brain injury on agitation, cognition, emotional problems, as well as tips for working with offenders that have this challenges. All 6,000 IDOC staff have completed this training webinar, and it is included in the required trainings for all new IDOC employees.

Finally, the project team has created materials to enhance the program, including fact sheets about brain injury behavior (provided in Appendix C), curricula for brain injury support groups (see Appendix D), and memory notebooks for self-management (see Appendix E). Additionally, brain injury resources and supports were provided including creation of brain injury wallet cards for offenders to use as a quick reference (see Appendix F) and vocational barrier letters offenders can use when interacting with the legal system for community education related to each offender's injury (see appendix G):

- **Assessing the Reliability of the OSU-TBI-ID Screening Instrument in a Criminal Justice Setting** (Appendix A)
- **Press Release:** Indiana Brain Injury Researchers Awarded $900,000 Grant to Improve Care for People with Traumatic Brain Injury (Appendix B)
- **Fact Sheets** that provide concise information about the various impacts that BI can have on behavior and functioning (Appendix C)
- **Curricula** for support groups: Brain Injury Education Group and Brain Injury Life Skills Group (Appendix D)
- **Memory Notebook** that can be used by ex-offenders to aid in self-management (Appendix E)

- **BI Wallet Card** that provides a brief summary of the impairments that an individual may experience and tips for effectively engaging, for quick reference (Appendix F).
- **Vocational Barrier Form Letter** that can be edited slightly to provide key details about an individual's BI to courts, parole staff, or other criminal justice partner to increase understanding about the impact that the BI may be having on the client's behavior (Appendix G).
- **Survey Instrument for Support Group Participants** to gather participant feedback on what benefits they are experiencing through the process (Appendix H).
- **PowerPoint Files for Indiana Department of Corrections Training** (Appendix I).
- **Conference Agendas, Programs, and Flyers** summarizing the topics covered during each conference provided to IDOC staff (Appendix J).

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Domestic Research and Evaluation

Traumatic Brain Injury State Implementation Partnership Grant Program

Assessing the Reliability of the OSU-TBI-ID Screening Instrument in Criminal Justice Settings

Konrad Haight

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AUGUST 2016

Traumatic Brain Injury State Implementation Partnership Grant Program

Assessing the Reliability of the OSU-TBI-ID Screening Instrument in Criminal Justice Settings

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This report provides the results from a reliability analysis for the administration of the OSU-TBI-ID screening tool. After the screening tool had been used multiple times by a variety of interviewers, it appeared to be the case that there were sometimes substantial differences in the proportion of those screened to have a potential moderate to severe traumatic brain injury (TBI) for each interviewer. We designed an inter-rater reliability assessment of the instrument. We drew a sample of participants who were screened by their parole officer in phase 1 of the project. We started with a random selection of approximately 10% of the participants screened in phase 1 of the project. Our original strategy was to call these participants and arrange a time to conduct the re-screening. We randomly selected another 10% sample to combine with the first, building in some oversampling because of difficulties in contacting those no longer on parole. We worked with parole officers to schedule screenings during regularly scheduled office visits with their parolees. Using this method we were able to conduct re-screenings with 43 of the original 10% and 23 of the second sample. Combined we conducted re-screenings with 66 phase 1 participants. The sample only include participants on parole. No participants from community corrections were re-screened.

For the purposes of this reliability assessment, we looked at agreement between the original screening and the re-screening on whether the conclusion was that the participant was likely to have suffered a moderate to severe TBI. On this criteria, there was agreement 88% of the time between the original screening and the re-screening. In Table 1 we present the cross-tabulation of the original screening results and the re-screening results. Agreement between the two tests is indicated in the green cells of the table. Disagreement is indicated in the orange cells.

Table 1: Differences in the Final Determination of the Presence of a Moderate to Severe TBI

		Re-screening		
		No TBI	Yes TBI	Total
Original Screening	No TBI	55	6	61
	Yes TBI	2	3	5
	Total	57	9	66

There were 6 cases in which the original screening indicated that the participant was not likely to have a moderate to severe TBI, but the re-screening suggested otherwise. There were 2 cases in which the original screening indicated that the participant was likely to have a moderate to severe TBI, but the re-screening did not. In total, there were 12% of cases where there was not agreement between the two screenings. We calculated Cohen's Kappa to determine the strength of agreement between the two screenings. Kappa values range from -1 to 1. A Kappa of 1 indicates perfect agreement between the two tests. A Kappa of 0 indicates that any agreement is arrived at purely by chance. A Kappa less than 0 indicates systematic disagreement between the two tests. Our analysis resulted in a Kappa of 0.367, which represents a fair level of agreement. A stronger Kappa might be desired, but as Viera and Garrett (2005) note, when the outcome is relatively rare (in our case, the identification of moderate to severe TBI) low values of Kappa can result even though there is apparently high rates of overall agreement. Screenings result in positive identifications of TBI infrequently enough that may result in lowering Kappa. Given the

importance of the screening tool for this project, we also wanted to examine reliability in ways that go beyond a simple summary measure like Kappa.

To understand what might be driving the disagreement between the original screening and the re-screening, we looked for patterns related to who was doing the screening. Overall, we did not identify any discernable pattern, either because of the original screener or because of the people who conducted the re-screenings. Of the original screeners, only 1 screener was represented more than once among the 8 cases where there was disagreement. That person was represented twice, one time for each type of discrepancy. Of the re-screeners, each of the 4 people who conducted the re-screenings was represented twice among the 8 discrepant cases.

We then looked for patterns in the responses to the individual questions themselves. We wanted to see if there were particular questions driving the disagreement results. There are five sets of questions that are important in this respect. Each of the sets is intended to capture head injuries from different causes. The first question in each set assesses whether or not the participant has ever experienced the particular type of injury. The second question assesses the duration of LOC, if any, that resulted from that injury, and it is ultimately that question that determines whether or not they were likely to have suffered a moderate to severe TBI, based on the duration of the LOC. The second question, though, is only asked if they indicate that they did suffer that type of injury in the first question. If the participant indicated that they had suffered that particular type of injury and that they experienced loss of consciousness (LOC) greater than 30 minutes, they would be marked as being likely to have a moderate to severe TBI. Table 2 shows the number of cases for which there was disagreement on the initial yes-no question as to whether the participant ever suffered that particular kind of injury.

Table 2: Differences in the Feeder Questions for Cases that Differed in the Final Determination of the Presence of a Moderate to Severe TBI

Question	Differences
1. Hospitalization for head or neck injury	3
2. Traffic collision	4
3. Fall/falling object	6
4. Fighting/violence	3
5. Explosion	1
Total	17

Of the 17 instances where the responses did not align, 12 were cases in which the original screener marked no, and the re-screener marked yes. That is, in 70% of the re-screenings where there were differences, evidence of TBI was detected when it had not previously been. This makes sense given that 75% of the discrepant cases were those in which the original screener indicated that they were not likely to have a TBI and the re-screener indicated that they were.

These differences are important, but it is the disagreement in the reported duration of LOC for each of these 5 questions that actually drives differences in final indication of whether or not the participant is likely to have a moderate to severe TBI. There are two ways that the reported duration for LOC could differ from one screening to the next.

1. Both screener and re-screener report LOC, but one is for less than 30 minutes
2. One of the two screeners reports LOC and the other did not report any LOC (question left blank)

For the 6 instances where the re-screener indicated TBI and the original screener did not, 3 were cases where the original screener did not report any LOC (left question blank) and 3 were cases where the original screener reported LOC of less than 30 minutes in duration. For the 2 discrepancies where the original screener indicated TBI and the re-screener did not, one was a case where the re-screener left the question blank and one was a case where on one question, the re-screener left the LOC question blank and on a separate question, the re-screener report LOC less than 30 minutes.

One way to further examine the reliability of the screening instrument is to examine the agreement between the original screeners and the re-screeners on the 5 feeder questions, for every case, not just those for which there was a difference in the identification of a TBI.

There are significant levels of disagreement between the re-screeners and original screeners on the first question in each set. In table three we present the occurrence of disagreement and agreement for the first question in each of the five sets. We also present the Kappa value for each question.

Table 3: Level of Agreement on Feeder Question for All Cases

Question	Disagreement (Original = Yes/Re-screen = No)	Disagreement (Original = No/Re-screen = Yes)	Agreement (Both No)	Agreement (Both Yes)	Kappa
1. Hospitalization for head or neck injury	5 (8%)	14 (21%)	38 (58%)	9 (14%)	0.303
2. Traffic collision	6 (9%)	13 (20%)	39 (59%)	8 (12%)	0.272
3. Fall/falling object	6 (9%)	20 (30%)	36 (55%)	4 (6%)	0.027
4. Fighting/violence	3 (5%)	13 (20%)	48 (73%)	2 (3%)	0.097
5. Explosion	2 (3%)	2 (3%)	61 (92%)	1 (2%)	0.302

Two things stand out from this table. First, based on the Kappa values there is lower agreement on each these individual questions than on the final determination of whether or not the participant has a moderate to severe TBI. With the exception of question 5, there is also lower agreement in terms of the percentage of the time that the two assessments agree. The Kappa for question 5 is low despite the fact that they two assessments agree 94% of the time. This is a result of the low level of occurrence of this particular type of injury (question 5 asks

about injuries resulting from being in the proximity of an explosion). Overall, this may indicate that the overall conclusions from the screening instrument may be robust with regard to the influence of responses on individual items.

The second thing that stands out is that where the two assessments do not agree, more often the re-screen has uncovered the presence of an injury where the original screening did not. Across all 5 questions, there were 84 instances where the two assessments do not agree out of a total 330 possibilities (5 question * 66 cases = 330). The re-screen captured an injury in 74% of the 84 instances, when the original did not.

When we look across all 5 questions, we see that out of the 66 re-screened cases, there was at least 1 disagreement between the original and re-screening 68% of the time. With disagreement in the final determination of the presence of a TBI only 12% of the time, it is clear that not all of these disagreements resulted in differences in the final determination. This is because the second question in the set, regarding duration of loss of consciousness, is actually what determines whether the participant is likely to have a moderate to severe TBI. When one screening captures and the other misses an injury that doesn't result in LOC sufficient to constitute a moderate to severe TBI, it does not result in a difference between the two in the final determination of the presence of a moderate to severe TBI.

Despite the fact that these differences didn't always result in differences in the final determination, they raise important questions about the administration of this screening instrument in criminal justice settings. .

A number of different things could be causing the differences between the screenings. They generally fall into three categories: memory/recall issues; interviewer effects; and data entry errors. Memory/recall issues involve the inability to remember things accurately about your past to report them during an assessment. Memory issues may be more likely to impact the first assessment, as participants have more time since hearing the question to think about and recall past injuries by the time they are re-screened. There are a few different interviewer effects that might impact the inter-rater reliability of the assessment. It could be the case that the re-screeners were more successful in administering the instrument and identifying injuries, perhaps because it was administered with greater fidelity to the proscribed process. The re-screeners also could have established better rapport with the participants, such that they were more willing to share personal details about past injuries. Data entry errors could impact both the screeners and re-screeners equally. They can occur when the screener enters the wrong information or fails to enter the information given.

Future projects are advised to incorporate a strategy to monitor the implementation of the screening questionnaire on an ongoing basis to ensure proper administration, as well as to troubleshoot actions and practices that might result in the kind of issues we identified here.

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Appendix B

Indiana Brain Injury Researchers Awarded $900,000 Grant to Improve Care for People with Traumatic Brain Injury

Project Aims to Reduce Associated Health Risks, Opioid Overdose and Incarceration

INDIANAPOLIS, Ind., July 11, 2018 – Every year 2.5 million Americans are hospitalized for a traumatic brain injury (TBI), according to the CDC. TBI significantly increases risk of psychiatric disorders, diabetes, heart attack, and stroke, as well as the person's risk of opioid abuse and overdose and incarceration. Researchers in the Brain Injury Rehabilitation Research, Training, and Outcomes Center *(RTOC)* at the Rehabilitation Hospital of Indiana (RHI) in partnership with the Indiana State Department of Health have received a federal grant for $900,000 to develop the first-ever proactive TBI management system designed to reduce those risks.

People with TBI are 11 times more likely to overdose on opioids and interact with the criminal justice system at much higher rates. In fact, initial screening showed that nearly 60 percent of participants in the county problem solving courts that serve Indianapolis have a history of TBI. These associated risks are due in part to gaps in the health care system that leave those with TBI in the care of doctors who are often unaware of their patients' TBI history, limiting their ability to effectively treat the effects of the TBI.

"The goal of this project is to improve health and reduce disability for those with TBI, but also to prevent incarceration and substance abuse, particularly of opioids," said Dr. Lance Trexler, Executive Director for Brain Injury Rehabilitation Research and Program Development at RHI. Brain injury is a chronic condition. "To provide the best possible results for people with any type of brain injury, care has to start, not end, at the trauma center."

The grant will be used to create a system of care that follows patients from the trauma center to a care team, which will assess needs and work with TBI-impacted individuals and their caregivers to develop a care plan. That plan will be supported through Resource Facilitation (RF), which connects those with TBI to all the resources necessary for quality health care including assistance applying for health insurance, help in finding a primary care physician, and transportation to doctor's appointments.

"This is an evidence-based service that is proving very effective," said Dr. Flora Hammond, Chair of Physical Medicine and Rehabilitation at Indiana University School of Medicine. "Initial work on Research Facilitation (RF) has shown that people who are on average two to three months post-injury and received RF services were seven times more likely to return to work than those who did not."

Similar results were seen in people who were on average ten years post-injury, with 70 percent of participants in RF successfully returning to competitive work.

In addition to improving the quality of life for those with TBI, these initial results have significant economic impact. Researchers at the Center for Business and Economic Research at Ball State University

determined that the annual aggregate lifetime savings generated because of RF in Indiana would be $249.1 million a year for wages and benefits, $30.97 million a year for revenue from taxes, $80.1 million a year for savings to SSDI/private disability, and $6.6 million a year for SNAP, resulting in a total of $366.77 million in potential savings a year.

Researchers will use this grant to continue to develop Resource Facilitation as a model system with care management protocols that can be replicated and will share their work with other states to help them incorporate RF in their TBI care plans. They also will establish a stronger evidence base for RF as a treatment method that improves health outcomes and prevents opioid abuse and incarceration.

“Indiana will be able to lead the way in providing effective care for people with TBI and helping other states identify ways to connect these individuals with the resources they need for optimal health outcomes,” said Katie Hokanson, Director of Trauma and Injury Prevention at the Indiana State Department of Health. “We are pleased to work with the Rehabilitation Hospital of Indiana and other states on this project.”

The grant is awarded by the Administration for Community Living at the U.S. Department of Health and Human Services. It provides $300,000 a year for three years.

About RHI Resource Facilitation and the Brain Injury Rehabilitation Research, Training, and Outcomes Center (RTOC)

The RHI Resource Facilitation (RF) Department developed the evidence for the efficacy and effectiveness for improving vocational outcomes for individuals with brain injury prior to becoming a service provider for RF throughout the State of Indiana. Indiana has the highest vocational outcomes in the nation. To achieve and sustain these outcomes, the RHI Resource Facilitation department strives to build the capacity of the professionals and community service providers throughout the State who work with people with brain injury. RHI’s RF Department provides RF for more than 300 people with brain injury at any one time throughout the State.

The RHI Brain Injury Rehabilitation RTOC is an incubator for new brain injury rehabilitation interventions based on clinical research. In addition to the RF research and program development, the RHI RTOC has successfully developed a new evidence-based brain injury coping skills group intervention that assists both the person with the injury and his or her family or caregiver. This intervention is now being provided nationally and internationally. RHI ROTC also has developed an evidence-based group intervention for couples where one of the partners has a brain injury with the goal of promoting satisfaction and communication in the relationship.

About RHI

Rehabilitation Hospital of Indiana (RHI), a community collaboration between Indiana University Health and St. Vincent, leads the practice of rehabilitative medicine through internationally-recognized translational research and innovative, patient-centered care. Specializing in brain injury, spinal cord

injury, stroke and comprehensive medical rehabilitation, RHI enables patients to regain hope and independence after a life-changing injury or illness.

RHI and the Indiana University School of Medicine comprise a TBI Model System Center, just one of 15 in the United States. The National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) awards TBI Model Systems grants to institutions that are national leaders in medical research and patient care. These institutions provide the highest level of comprehensive specialty services from the point of injury through eventual re-entry into full community life. The Traumatic Brain Injury Model Systems (TBIMS) program, sponsored by (NIDILRR), Administration for Community Living, and the U.S. Department of Health and Human Services, supports innovative projects and research in the delivery, demonstration, and evaluation of medical, rehabilitation, vocational, and other services designed to meet the needs of individuals with traumatic brain injury.

About ISDH

The Indiana State Department of Health (ISDH) exists to promote, protect and improve the health and safety of all Hoosiers.

Rehabilitation Hospital of Indiana
Resource Facilitation Department

FACT SHEET

Brain Injury and Attention/Concentration

Do you have trouble with attention or focus since your brain injury?

What does this mean?

Attention is a vital part of our everyday functioning. All of us from time to time become distracted, whether it is a phone call in the middle of cooking dinner, or being interrupted to attend a meeting while in the middle of writing a report. When a person sustains a brain injury, the following types of attention may be affected:

- Focused: the ability to attend to an activity or task with no other distractions. For example a person might do a crossword puzzle in quiet.
- Selective: being able to attend to a task and block out unimportant information. For example reading a book while playing background music.
- Alternating: the ability to switch between tasks. This is especially common in real-life situations. For example: working in an office and being interrupted by phone calls, filing and greeting clients.
- Divided: The ability to do two or more tasks at the same time. One of the most common examples is driving a car while changing radio stations and looking for an unfamiliar exit.

How might my brain injury affect attention/concentration?

A person with a brain injury may be unable to focus, pay attention, or attend to more than one thing at a time. Since attention skills are considered a "building block" of higher level skills (such as memory and reasoning), people with attention or concentration problems often show signs of other cognitive problems as well.

Common examples of attention/concentration difficulties:

- Restlessness and being easily distracted.
- Difficulty finishing a project or working on more than one task at a time.
- Problems carrying on long conversations or sitting still for long periods of time.

Recommended strategies:

- Decrease the distractions. For example, work in a quiet room.
- Focus on one task at a time.
- Begin practicing attention skills on simple, yet practical activities (such as reading a paragraph) in a quiet room. Gradually make the tasks harder (read a short story) or work in a more noisy environment.
- Take breaks when you get tired.

TRAUMATIC BRAIN INJURY
MODEL SYSTEMS

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Rehabilitation Hospital of Indiana
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FACT SHEET

Brain Injury and Awareness

Do others notice issues since your brain injury that you do not?

What does this mean?

An extremely important area of cognition, associated with the frontal lobes, is awareness of self and others. After brain injury, many individuals are unaware of the effect their words and actions may have on others and therefore do not see the need to change their behavior. Individuals with brain injuries may lack self-awareness, and as a result they may behave inappropriately or impulsively (without thinking it through) in social situations.

How might my brain injury affect awareness?

There may be a lack of insight regarding difficulties after a brain injury. The type and degree of insight varies from person to person as time passes post-injury. Many people with a brain injury have some level of understanding that they are not the people they used to be. They experience difficulties at work and in social situations but may have minimal insight into their own contribution to these, perhaps tending to blame external factors. Lack of awareness could prove potentially dangerous. It is, of course, important to remain aware of such situations, for example, driving or working with potentially dangerous machinery. Self-awareness requires complex thinking skills that are often weakened after brain injury.

Common examples of awareness:

- Denial of cognitive problems, even if these are obvious to others.
- Saying hurtful or insensitive things, acting out of place, or behaving in inconsiderate ways.
- Lack of awareness of social boundaries and others' feelings, such as being too personal with people they don't know well or not realizing when they have made someone uncomfortable.

Recommended strategies:

- Insight usually develops over time. Some people may never fully regain their awareness of self and others and as such, it will be important for you to seek out feedback from those around you to know if you are having difficulties you are not aware of.

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Acquired Brain Injury

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FACT SHEET

Brain Injury and Mental Fatigue

Do you feel mentally drained since your brain injury?

What does this mean?

After a brain injury, it is common to have fatigue. Fatigue is a feeling of exhaustion, tiredness, weariness or lack of energy. After traumatic brain injury (TBI), you may have more than one kind of fatigue (see below).

How might my brain injury cause mental fatigue?

Fatigue is one of the most common problems people have after a TBI. As many as 70% of survivors of TBI complain of mental fatigue. You might not be able to multi-task or switch from task-to-task as easily as you might have before. You might experience an overwhelming tiredness that impairs your daily functioning (i.e., working full-time, driving, etc.) and feel mentally "drained" after just a short period of time when working on a task.

Common examples with mental fatigue:

- "After a while, I just can't concentrate anymore."
- "It's hard to stay focused."
- "My mind just goes blank."

Recommended strategies:

- Make a list of things that need to be done and when. List them in order of what should be done first.
- Break down activities into smaller steps.
- When figuring out what steps you need to do first to complete an activity, think of the end goal and work backwards.
- Do the more complicated or difficult tasks early in the day when you have the most energy and are mentally alert.
- Pay attention to what triggers your fatigue.
- Get more sleep and rest.
- Set a regular schedule.
- Alcohol and marijuana will generally make fatigue worse.
- Caffeine (coffee, cola products) should be avoided after lunch if sleeping is a problem.
- Resume activities gradually; start with familiar tasks at home or work.
- Improve your time management.
- Exercise daily.
- Talk to your doctor regarding possible medication recommendations if your fatigue does not improve.

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FACT SHEET

Brain Injury and Communication

Do you have trouble with commun-ication since your brain injury?

What does this mean?

You might be experiencing difficulties understanding others or expressing yourself. You might be feeling misunderstood or unable to clarify thoughts. This means certain brain functions controlling communication may be affected.

How might my BI affect communication?

Injury to certain parts of the brain can cause persons with TBI to have difficulty understanding and expressing information.

Common examples of communication difficulties:

- Difficulty thinking of the right word.
- Trouble following conversations or understanding what others say.
- Rambling or getting off topic easily.
- Difficulty with more complex language skills, such as expressing thoughts in an organized manner.
- Trouble communicating thoughts and feelings using facial expressions, tone of voice and body language (non-verbal communication).
- Having problems reading others' emotions and not responding appropriately to another person's feelings or to the social situation.
- Misunderstanding jokes or sarcasm.

Recommended strategies:

Work with a speech therapist to identify areas that need work. Communication problems can keep improving for a long time after the injury.

How family members can help:

- Use kind words and a gentle tone of voice. Be careful not to "talk down" to the person.
- When talking with the injured person, periodically stop and ask if he or she understands what you are saying, or ask the person a question to determine if he or she understood what you said.
- Do not speak too fast or say too much at once.
- Develop a signal (like raising a finger) that will let the injured person know when he or she has gotten off topic. Practice this ahead of time. If signals don't work, try saying "We were talking about..."
- Limit conversations to one person at a time.

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Rehabilitation Hospital of Indiana
RESOURCE FACILITATION DEPARTMENT

FACT SHEET

Brain Injury and Social Communication

Do you have trouble expressing your thoughts and feelings to others since your brain injury?

What does this mean?

Social communication involves sending and receiving messages to and from others: being able to understand others and what others meant to communicate and being able to express your thoughts and feelings to others in a way they can understand.

Social communication includes many skills, both verbal and nonverbal.

Social communication must be adjusted for the situation: A person needs to adjust how they communicate depending on the situation and the persons involved. This includes the physical setting, the social demands of the situation, and one's relationship to person(s).

How might my brain injury impact affect social communication?

- Impairment is common following moderate to severe TBI.
- Problems result from both cognitive and personality changes that can be caused by injury to the brain.
- Other factors such as pre-injury ability, emotional reactions to disability, and environmental factors may also contribute to social communication difficulties after injury.

Common examples of social communication:

Attention/Concentration problems can lead to:
Difficulty resisting distraction during conversation
Problems keeping track of what other people are saying
Problems in staying on-topic

Memory problems can lead to:
Repeating oneself when talking
Losing track of the conversation topic
Mixing up instructions or messages

Executive Functioning problems can lead to:
Having trouble starting conversations
Interrupting others
Poorly organized speech
Excessive talking

Impaired Social Cognition can lead to:
Difficulty understanding sarcasm or "getting the joke"
Poor use of feedback from others
Difficulty taking someone else's perspective

Recommended strategies:

- Practice with your caregiver (role-play and rehearsal) appropriate examples of social communication.
- If you're already in the middle of a conversation and sense inappropriate social communication, let the person know you hear what they're saying, but you notice yourself becoming agitated and take a "time out". Or use a STOP and THINK approach to your triggers.
- Use empathy. Try to see things from the other person's point of view.
- Seek positive feedback from your caregiver when you communicate appropriately, and remember to reward yourself often too.

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FACT SHEET

Brain Injury and Working Memory Skills

Do you have trouble processing new info for reasoning, comprehension, and learning since your brain injury?

What does this mean?

Working memory is that initial and small storage area that allows processing of ongoing events and cognitive procedures. Most tasks of everyday functioning involve an aspect of working memory abilities.

How might my brain injury affect working memory skills?

Working memory skills are relevant to situations in which one must recall, manipulate, and transform information before responding. Heightened anxiety and/or impaired storage capabilities that result from a brain injury might very well impair working memory.

Common examples of working memory problems:

- You're unable to repeat a series of numbers backward.
- You're unable to hold on to information long enough to use it.
- You struggle to concentrate in order to follow instructions.
- You've noticed difficulties in many different subject areas, mainly reading and math.

Recommended strategies:

You can identify specific memory impairments through comprehensive neuropsychological testing/assessment. If diagnosed with working memory impairment, there are two different routes of therapy you can take:

1. External Aids
   - Posted checklists and notes, memory notebooks, electronic organizers, electronic watches (+ alarm and light), paging systems, computer-based systems
   - Environmental cues
     i. Placing clocks and calendars in visible places
     ii. Color coding objects or lists by category or event
     iii. Placing lists on the front door before leaving the house
     iv. Deciding on proper and consistent places to keep things (keys/glasses)
2. Internal Aids
   - Rehearsal
   - Mnemonic devices
   - Association and imagery

Intervention of Short-Term and Working Memory Impairments in Closed-Head Injury: A Literature Review
Irene H. Kim (Craig Hospital, Englewood, CO)

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FACT SHEET

Brain Injury and Depression

Do you have trouble with depress-ion since your brain injury?

What does this mean?

Depression is a feeling of sadness, loss, despair or hopelessness that does not get better over time and is overwhelming enough to interfere with daily life. There is cause for concern when feeling depressed or losing interest in usual activities occurs at least several days per week and lasts for more than two weeks.

How might my BI lead to depression?

Depression is a common problem after BI. About half of all people with TBI are affected by depression within the first year after injury. Even more (nearly two-thirds) are affected within seven years after injury. More than half of the people with TBI who are depressed also have significant anxiety. Depression may appear after a BI because of 1) physical changes in the brain, 2) emotional response to the injury, or 3) factors unrelated to the injury.

Common examples of depression:

Symptoms of depression include:

- Feeling down, sad, blue or hopeless.
- Loss of interest or pleasure in usual activities.
- Feeling worthless, guilty, or that you are a failure.
- Changes in sleep or appetite.
- Difficulty concentrating.
- Withdrawing from others.
- Tiredness or lack of energy.
- Moving or speaking more slowly, or feeling restless or fidgety.
- Thoughts of death or suicide.

Feeling sad is a normal response to the losses and changes a person experiences after BI. However, prolonged feelings of sadness or not enjoying the things you used to enjoy are often key signs of depression.

Recommended strategies:

- Antidepressant medications (such as SSRIs or SNRIs) work by helping to re-balance the natural chemicals in the brain that may have been altered by the BI.
- Psychotherapeutic (counseling) approaches (Cognitive Behavioral Therapy or CBT, and Behavioral Activation Therapy) are highly effective in treating the symptoms of depression.
- Other treatment approaches such as exercise, acupuncture, biofeedback, support groups can be additional sources of help.
- **If you have strong thoughts of suicide and a suicide plan, call a local crisis line, 911, the 24-hour National Crisis Hotline at 800-273-8255, or go to an emergency room immediately.**

TRAUMATIC BRAIN INJURY
MODEL SYSTEMS

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Brain Injury and PTSD

Do you have trouble with PTSD since your brain injury?

What does this mean?

Post-Traumatic Stress Disorder (PTSD) is an anxiety disorder that can occur after a person has been through a traumatic event. These events can include: Natural disasters, car crashes, sexual or physical assaults, terrorist attacks, and combat during wartime. During a traumatic event, a person's life or the lives of others may be in danger. They may feel afraid or feel that they have no control over what is happening. And if the person has a TBI, too, these feelings of lack of control and fear can balloon into confusion, challenges with memory, or intense emotion.

How might my BI affect PTSD?

More than 5 million people in the United States suffer from post-traumatic stress disorder, or PTSD and it can often go hand-in-hand with traumatic brain injury as the symptoms often overlap.

Common examples of PTSD:

Generally, symptoms of PTSD can occur when a person re-experiences the traumatic event, tries to avoid thinking about the event, or is experiencing high levels of anxiety related to the event. Some of the most common symptoms include:

- Having recurrent nightmares
- Having "flashbacks"
- Being physically responsive, such as experiencing a surge in your heart rate or sweating, to reminders of the traumatic event
- Having a difficult time falling or staying asleep
- Feeling more irritable or having outbursts of anger
- Feeling constantly "on guard", like danger is lurking around the corner
- Making an effort to avoid thoughts, feelings, or conversations about the traumatic event
- A loss of interest in important, once positive, activities
- Difficulties having positive feelings (i.e., happiness or love)

Recommended strategies:

Not all people who are traumatized develop PTSD; but for those who do, treatment brings hope. Sometimes counseling called cognitive-behavioral therapy (CBT) is effective; medicines known as SSRIs can help, too, like Zoloft or Paxil. Sometimes a combination of both therapies proves successful.

Here are some strategies to help with PTSD:

- Find a therapist.
- Join a support group or other support services.
- Find a peer mentor.
- Meditate or use other relaxation strategies.

Sometimes PTSD, especially in conjunction with TBI, can lead to unhealthy behavior like substance abuse or taking unnecessary risks. Sharing your experiences, feelings, and fears with others, whether with friends, family, or a professional, can lessen the burden.

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Brain Injury and Stress

Do you have trouble managing stress since your brain injury?

What does this mean?

Since the injury, you have likely been under a great deal of stress. A little stress is part of life, but stress that goes on for a long time can have a negative effect on the mind and body. Chronic stress is related to medical problems such as heart disease, cancer, and stroke.

- Stress can affect your ability to concentrate, to be organized, and to think clearly.
- Stress also has a negative effect on your relationships with other people because it can make you irritable, less patient, and more likely to lash out.
- Stress can lead to depression and/or anxiety.

How might stress affect my recovery?

If you are under constant stress, you are not going to be as helpful to yourself and your loved ones. *If you do not take the time to rest and care for yourself, you will get fewer things done, which will lead to more stress.*

Recommended strategies:

- Learn to relax
  - Breathe deeply and focus on your breathing
  - State a word or phrase that has positive meaning (e.g. peace)
  - Visual imagery
- Learn which coping strategies work for you
  - Be open to trying new ways of coping and find out what works for you.
  - Practice often.
  - Some coping strategies that others have found helpful:
    - Taking time for yourself
    - Keeping a regular schedule for yourself
    - Getting regular exercise such as taking a 20- 30 minute walk each day
    - Participating in support groups
    - Maintaining a sense of humor
    - Being more assertive about getting the support you need
    - Changing roles and responsibilities within the family

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Brain Injury and Alcohol

Do you have trouble with alcohol since your brain injury?

What does this mean?

- After TBI, many people notice their brains are more sensitive to alcohol. Most simply stated, alcohol is a toxin to brain cells and can impede brain recovery processes.

How might use of alcohol affect my recovery after BI?

- Drinking increases your chances of getting injured again, makes cognitive (thinking) problems worse, and increases your chances of having emotional problems such as depression. In addition, drinking can reduce brain injury recovery. For these reasons, staying away from alcohol is strongly recommended to avoid further injury to the brain and to promote as much healing as possible.

Common examples of alcohol difficulties:

- Alcohol puts you at greater risk of:
  a. Seizures,
  b. Another TBI
  c. Cognitive impairment,
  d. Depression,
  e. Sexual dysfunction.

Recommended strategies:

There are many ways to stop using alcohol or other drugs and many ways to reduce the potential for harm.

- Don't underestimate your ability to change your alcohol use if you want to.
- Cut down or stop drinking.
- Ask for family members' help.
- Talk to your doctor.
- Seek professional help, such as addictions counseling or Alcoholics Anonymous (AA).

TRAUMATIC BRAIN INJURY MODEL SYSTEMS

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FACT SHEET

Brain Injury and Balance

Do you have trouble with balance since your brain injury?

What does this mean?

Balance is the ability to keep your body centered over your feet. The ability to maintain your balance is determined by many factors, including your physical strength and coordination, your senses, and your cognitive (thinking) ability. Most people can control their body movement within certain limits before losing their balance and needing to adjust their posture or take a step to keep from falling. Adjusting your posture or taking a step to maintain your balance before, during, and after movement is a complex process that is often affected after brain injury.

How might my brain injury impact affect balance?

People with brain injury commonly report problems with balance. Between 30% and 65% of people with brain injury suffer from dizziness and disequilibrium (lack of balance while sitting or standing) at some point in their recovery. Dizziness includes symptoms such as lightheadedness, vertigo (the sensation that you or your surroundings are moving), and imbalance.

Common reasons for balance issues:

- A possible side effect of medications
- A drop in blood pressure when standing or sitting up suddenly
- Problems with eyesight (vision impairments)
- Inner ear problems (vestibular impairments)
- Problems with your ability to sense things (sensory impairments)
- A traumatic injury to the brainstem and cerebellum
- Leakage of inner ear fluid into the middle ear (called perilymph fistula)
- Mental health issues: anxiety, depression or a fear of falling

Recommended strategies:

- Increasing your strength and flexibility will help your balance.
- Find your limits in balance by moving your body over your feet as far as you can without lifting your feet.
- You can also practice movements that allow you to transition from one position to another.
- Practice standing or walking in different conditions.
- Practice activities that will improve your balance while walking.
- A physical or occupational therapist can help design a program that is safe for you to practice at home. Be cautious when working on your balance, and make sure you work at an appropriate level to avoid falling when no one is around.

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Brain Injury and Headaches

Do you have trouble with headaches since your brain injury?

What does this mean?

Headache is one of the most common symptoms after traumatic brain injury (often called "post-traumatic headache"). Over 30% of people report having headaches which continue long after injury.

Why are headaches common after brain injury?

Headaches after a traumatic brain injury can be long-lasting, coming and going even past one year. Headaches can make it hard for you to carry out daily activities or can cause you to have more difficulty thinking and remembering things. Right after a severe traumatic brain injury, people may have headaches because of the surgery on their skulls or because they have small collections of blood or fluid inside the skull. Headaches can also occur after mild, moderate, or severe injury and after the initial healing has taken place. These headaches can be caused by a variety of conditions, including a change in the brain caused by the injury, neck and skull injuries that have not yet fully healed, tension and stress, or side effects from medication.

Common types of headaches:

Migraine, tension-type, cervicogenic, and rebound headaches.

Recommended strategies:

- Get enough sleep.
- Get daily exercise.
- Avoid caffeine.
- Avoid certain foods that may trigger a headache, like red wine, monosodium glutamate (MSG, a common food additive) or certain cheeses.
- Avoid taking pain medicines on a daily basis unless your health care provider prescribes it.

Common types of treatment for occasional headaches include:

- Over-the-counter pain medicines like Acetaminophen (Tylenol®) or ibuprofen, prescription medicines for migraine headache like sumatriptan (Imitrex®).
- Relaxation therapy/meditation, stretching, acupuncture, therapeutic massage, heat/ice packs.
- Biofeedback therapy or local injections.

Treatments for recurrent headaches that happen more than twice a week:

- Your physician may prescribe antidepressants, antiseizure medicines, certain blood pressure medications, or botulinum toxin (Botox) injections.

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FACT SHEET

Brain Injury and Memory

Do you have trouble with memory since your brain injury?

What does this mean?

Memory is the ability to store, retain, and eventually recall information. Problems with memory are one of the most common complaints after a brain injury. Memory impairments can often interfere with many aspects of life, including home, social, and work activities. Examples of frequently affected activities include: keeping dates and appointments; taking medications; remembering to do chores or errands; recalling information from a book, TV show or movie; and recalling personal events and conversations.

How might my BI affect memory?

Memory impairments may range from mild to severe depending on what areas of the brain were injured and the extent of the injury. The good news is that there are some aspects of memory that are usually unaffected after a BI, and there are strategies that may help those areas that are affected. There are many different types of memory. The following are some types of memory.

Common examples of memory difficulties:

- Short-term Memory: The ability to recall recently learned information. This is the most common type of memory affected after BI.
- Long-term Memory: The ability to remember information about something that happened a long time ago. This type of memory is generally not affected after a BI.
- Procedural Memory: For skills and procedures; is sometimes known as "how to" knowledge. Many skills can be practiced and rehearsed to the point that they become part of your procedural memory and they can usually be carried out automatically without too much thought. This type of memory usually remains intact after a BI; however, creating new procedural memories after BI may require more time and practice.

Recommended strategies:

- Pay attention
- Limit distractions
- Be an active learner
- Practice
- Visualize
- Make an emotional connection
- Understand the information
- Challenge Yourself
- Link new information to something familiar
- Group similar information
- Relax and Sleep
- Exercise
- Use Memory Aides
- Communicate with your doctor

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Brain Injury and Seizures

Do you have trouble with seizures since your brain injury?

What does this mean?

One of the problems that can occur after a traumatic brain injury (TBI) is seizures. Although most people who have a brain injury will never have a seizure, it is good to understand what a seizure is and what to do if you have one. Most seizures happen in the first several days or weeks after a brain injury. Some may occur months or years after the injury. About 70-80% of people who have seizures are helped by medications and can return to most activities. Rarely, seizures can make you much worse or even cause death.

How might my BI lead to seizures?

- 3 types of seizures: Early post-traumatic seizures, late post-traumatic seizures, and epilepsy.
- The cause of your brain injury can help doctors figure out how likely you are to have seizures.
  - 65% of people with brain injuries caused by bullet wounds have seizures.
  - 20% of people with 'closed head injuries' that cause bleeding between the brain and the skull experience seizures.
  - Over 35% of people who need 2 or more brain surgeries after a brain injury experience late post-traumatic seizures.
  - Over 25% of people with bleeding on both sides of the brain, or who have a blood clot that must be removed by surgery, experience late post-traumatic seizures.

Recommended strategies:

- Medications that are used to control seizures are called antiepileptic drugs (AEDs).
- If your seizures continue even after trying medications, your doctor may refer you to a comprehensive Epilepsy Center for more tests and to be seen by special seizure doctors called epileptologists or neurologists specializing in epilepsy.
- In most states, if you have had a seizure you can- not drive and you must notify the department of motor vehicles (DMV). Usually you won't be able to return to driving for a period of time, or until your seizures have been completely stopped.
- Always have someone with you if you are in water.
- Don't climb on ladders, trees, roofs or other tall objects.
- Let people you eat with know what to do in case you have a seizure and start choking.

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Brain Injury and Sensory Hypersensitivity

Do you have trouble with sensitivity to light or noise since your brain injury?

What does this mean?

What we experience with our senses is essentially more information for the injured brain to try to process and organize. You can have difficulties processing sensory information just like any other information in your brain.

How might my BI affect sensory hypersensitivity?

If it seems like your sense of touch, taste, smell, hearing, or vision is extra sensitive or heightened after your brain injury, it's not your imagination. Sensory hypersensitivities are a major, yet not as obvious, contributor to fatigue and overload after brain injury.

Pain and fatigue can intensify sensory hypersensitivities, putting you in a hyper-sensitive or hyper-vigilant state. When you are in a hyper-sensitive or hyper-vigilant state, even subtle stimulants feel overwhelming. Especially sights and sounds that didn't bother you before, may now trigger anxiety and the "fight-or-flight" response where you begin to feel threatened and out of control. You may shut down and not be able to do any more or you may feel compelled to escape from the situation. It can be very taxing, physically and mentally.

Common examples of sensory hypersensitivity:

- Sounds that you barely noticed before are alarming and startle you.
- It feels like you have megaphones in your ears.
- Background sounds and stimulating environments become overwhelming.
- Fluorescent and bright lights give you headaches.
- Clothing that was comfortable before feels irritating now.
- Large gatherings of people feel overwhelming.

Recommended strategies:

Stress management, movement and using all of your senses can help your brain organize and integrate the senses. This is similar to what children do. Consider how physically active children are as they grow and develop!

- Limit exposure to avoid sensory overload.
- Monitor your pain, stress and fatigue levels.
- Try avoiding nicotine, caffeine and alcohol.
- When you are starting to feel stressed or anxious, try incorporating another sense, such as finger painting (sense of touch) or cooking (sense of taste).
- Experiment with activities and alternative therapies that involve your senses, such as aromatherapy.
- Meditate.
- Seek professional consultation with your physician.

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FACT SHEET

Brain Injury and Sleep

Do you have trouble with sleep since your brain injury?

What does this mean?

Many people who have brain injuries suffer from sleep disturbances. Not sleeping well can increase or worsen depression, anxiety, fatigue, irritability, and one's sense of well-being. A review of sleep disorder studies and surveys suggest that sleep disorders are three times more common in traumatic brain injury patients than in the general population and that nearly 60% of people with traumatic brain injury experience long-term difficulties with sleep. Women are more likely to be affected than men. Sleep problems are more likely to develop as the person ages.

How might my brain injury affect sleep?

Physical and chemical changes in the brain, changes in breathing control, side-effects of medications, daytime sleeping (napping) and physical inactivity, presence of pain and/or depression, and use of alcohol, caffeine and/or nicotine.

Common examples of sleep difficulties:

- Insomnia: Difficulty with falling asleep or staying asleep; or sleep that does not make you feel rested. Insomnia can worsen other problems resulting from brain injury, including behavioral and cognitive (thinking) difficulties. Insomnia makes it harder to learn new things. Insomnia is typically worse directly after injury and often improves as time passes.
- Excessive Daytime Sleepiness: Extreme drowsiness.
- Delayed Sleep Phase Syndrome: Mixed-up sleep patterns.
- Narcolepsy: Falling asleep suddenly and uncontrollably during the day.

Recommended strategies:

- Set an alarm to try to wake up at the same time every day
- Exercise every day
- Don't nap more than 20 minutes during the day
- Try to go to bed at the same time every night
- Avoid caffeine, nicotine, alcohol and sugar for five hours before bedtime
- Keep stress out of the bedroom
- Talk to your doctor to explore safe and effective treatments
- Non-pharmacological therapies (psychotherapy [counseling], relaxation therapy, use of special bright lights [phototherapy])
- Medications (talk to your doctor)
- Natural remedies (herbal teas, melatonin and valerian)

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Brain Injury and Substance Abuse

Do you have trouble with substance abuse since your brain injury?

What does this mean?

Substance use after brain injury can include alcohol, illicit drugs, and/or abuse of prescription medications. The effects of these substances on the brain after an injury can impede recovery.

How might use of substances affect my recovery after BI?

There are many reasons why using drugs and alcohol after a brain injury is **not recommended**:

- People don't recover as well.
- Brain injuries cause problems in balance, walking, or talking that get worse when a person uses alcohol or other drugs.
- People often say or do things without thinking first, a problem that is made worse by using alcohol and other drugs.
- Brain injuries cause problems with thinking, like concentration or memory, and using alcohol or other drugs makes these problems worse.
- Alcohol and other drugs have a more powerful effect on the brain after injury.
- People are more likely to have times that they feel low or depressed, and consuming alcohol and other drugs makes this worse.
- Drinking alcohol or using other drugs can cause a seizure.
- People are more likely to have another brain injury.

Recommended strategies:

People with brain injury and their families should know that there are treatments and strategies out there, and ones that can be very effective. Some of them include:

- Attending a support group
- Learning to cope with cravings
- Setting realistic goals
- Building self-esteem
- Medication
- Seek professional help

It's crucial for people to get treated for both the TBI and the addiction simultaneously and by someone who knows about both. Seek out a program or programs where there is collaboration and communication between the brain injury treatment providers and the substance abuse treatment providers.

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Brain Injury and Vision

Do you have trouble with vision since your brain injury?

What does this mean?

We often think about vision as being simply what we see. However, vision also includes how our brains make sense of what we see. Vision also helps other systems in the body work well. These include the systems for thinking and moving. When the visual system isn't working properly, there can be a wide-ranging impact on our daily living activities (e.g., reading, driving, employment, school, and recreational activities) and quality of life.

How might my BI affect vision?

Depending on its location and severity, a TBI can affect your vision by damaging parts of the brain involved in visual processing and/or perception (e.g., cranial nerves, optic nerve tract or other circuitry involved in vision, occipital lobe).

Common examples of vision difficulties:

There are a variety of visual problems that can occur at different time points in your recovery. Some of the most common types of vision problems include:

- Blurred vision, especially with seeing up close
- Double vision
- Decreased peripheral vision

There can also be complete loss of vision in one or both eyes depending on the injury.

Recommended strategies:

- Take breaks often when doing tasks that rely on vision.
- Magnify objects.
- Increase contrast. Making an object stand out from the background can make it easier for you to see it.
- Reduce glare.
- Avoid visual overload. Cut down on clutter in your home and at work. Try to keep all the items needed to complete a task together in one place. Designate one storage place for a frequently used item. This can help keep you from being overwhelmed by visual information.
- For those with complete vision loss, devices such as talking timers, alarm clocks, microwaves, thermometers, tactile dots, screen-reading software for computers, talking books, various mobile phone apps, and mobility canes may be helpful. Learning Braille may also be helpful.
- Evaluation by a neuro-optometrist or vision rehabilitation therapist may also be needed.

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Appendix D

PACE Groups

1. **BI 101- Neuroanatomy- 2 sessions**
    a. Basic Brain anatomy overview
    b. Basic Functions of Brain – Cognitive, Physical- seizures, mental fatigue, hypersensitivity and all physical aspects, Emotional

3. **BI and Mental Health- 2 sessions**
    a. Depression and Anxiety
    b. Other mental health issues- OCD, PTSD, Bipolar, Schizophrenia, Etc.

4. **BI and Cognition**
    a. Memory
    b. Attention
    c. Organization
    d. Awareness

5. **BI and Substance Abuse- 2 sessions**
    a. Alcohol
    b. Other substances

6. **BI and Communication**
    a. Interpersonal Skills

7. **BI and Relationships**
    a. Interpersonal Skills
    b. Intimacy and Sexuality

8. **BI and Self-Management of Emotions**
    a. Anger Management
    b. Distress Tolerance

9. **BI and Criminal Behavior**
    a. Statistics and Discussion on why these statistics are relevant.
    b. Frontal Lobe deficits
        1. Executive Functioning
        2. Judgment
        3. Decision Making
        4. Problem Solving

10. **BI and Employment**

11. **BI and Basic Self- Management- nutrition, sleep, exercise, housing, financial, transportation**

12. **Review of all groups and Feedback for new topics to be added.**

Appendix E

Binder for PACE- 2/17/16

1. **In plastic part on outside of binder: Weekly calendar (at a glance)**
2. **8 Tabs:**
    - **A. Monthly calendars (6 months)**
    - **B. General Contacts**
    - **C. Medical/Mental Health Contacts- already created**
        1. **Medication List**
    - **D. Employment**
        1. **Career Networking (sub tab)**
    - **E. Vocational Rehabilitation**
    - **F. Life Skills Group**
    - **G. BI Education Group**
    - **H. Miscellaneous**

- **Behind each tab, there will be 3 blank "Session Notes" pages. Alicia will keep others on hand at PACE for when we need more.**

- **In each main tab, we may add subtabs.**

- **We plan to create labels for the fronts of each tab/divider page. These labels will give a quick "tip" list of what may be appropriate to put under each section.**

    A. Monthly Calendars
    B. General Contacts
    C. Medical/Mental health Contacts-
    D. Employment
    E. VR
    F. Life Skills
    G. BI Education
    H. Miscellaneous-

Rehabilitation Hospital of Indiana
RESOURCE FACILITATION DEPARTMENT

PACE

Mr. Jeffery (Scot) Hayward has been evaluated through our Brain Injury Program and was found to have brain injury related difficulties in the following areas:

☐ Memory ☐ Attention ☐ Insight ☐ Fatigue ☐ Seizures

☐ Problem Solving ☐ Judgment ☐ Impulsivity ☐ Balance

☐ Irritability ☐ Mental health ☐ Communication

☐ Other: _____

Please contact Jason Cochran, MS at 317.612.6800 for questions or concerns.

Jason Cochran, MS, **PACE Resource Facilitator**

Brain Injury: Common Symptoms

- **Physical Impairments**- speech, vision, hearing, headaches, motor coordination, seizure disorders, balance.
- **Cognitive Impairments-** short term memory deficits, impaired concentration, slowness of thinking, limited attention span, impairments of perception, communication skills, planning, writing, reading, and judgment.
- **Emotional Impairments-** mood swings, self-centeredness, anxiety, depression, lowered self-esteem, restlessness, lack of motivation, and difficulty controlling emotions."

Appendix G

Date

Name of Client

To Whom it May Concern,

We am contacting you regarding a client of yours named _____. Mr. _____ has recently enrolled in the Traumatic Brain Injury project with PACE. The TBI project is a federally-funded pilot program designed to reduce recidivism among reentrants who have experienced moderate or severe traumatic brain injury (TBI). TBI can lead to impairment of cognitive abilities, physical functioning, and behavioral or emotional function.

Through this initiative, reentrants in Marion County are screened for TBI by Indiana Department of Corrections Parole District 2 or Marion County Community Corrections, and those whose screening results indicate a likelihood of moderate or severe TBI are then further evaluated by qualified professionals. If eligible, clients are engaged in a suite of services designed to address the cognitive, behavioral, and emotional impairments that often interfere with their ability to successfully reintegrate into the community. These services are being offered through a partnership between Public Advocates in Community re-Entry (PACE) and Rehabilitation Hospital of Indiana (RHI).

We would like to make you aware that we have identified and are working to address one or more deficits that your client, Mr. _____ is experiencing that are the result of his brain injury. Please see the checklist below for a summary of the barriers to employment that have been identified to date.

Please consider this information when engaging with your client. We look forward to the opportunity to partner with you in supporting the successful reintegration of this client. Please contact us with any questions or concerns regarding Mr. _____.

Cognitive Barriers

_____ Attention/Concentration:

- May get distracted easily (ex: Client cannot read when there are distractions).
- May not be able to switch attention or tasks easily (ex: Client is working on one task and cannot pay attention to another or to verbal instructions).

_____ Memory:

- May not be able to remember newly learned information or recent events (ex. Client can't remember duties just explained)
- May not be able to save, process and manipulate information in one's head (ex. Client cannot follow through with completing a task).
- May not remember procedures (how to do) skills (ex. Client cannot remember how to ride bicycle).

_____ Awareness:

- May deny there are cognitive problems (ex. Client thinks that they do not have memory problems and continues to forget to take his/her medications despite knowing that he should).

_____Mental fatigue:

- May become exhausted, tired or have a lack of energy easily (ex. Client may not be able to concentrate or focus for certain periods of time and may need breaks).

_____Other:

Executive and Neurobehavioral Barriers

_____ Impulsivity:

- May not be able to control urges that can lead to impulsive and often inappropriate behavior (e. Client may become angry at another while working).

_____Lack of Initiation:

- May have a hard time finishing what they started (ex. Client says they want to be employed but does not do anything towards this goal).

_____Inability to Problem-Solve

- May not be able to generate options for solution when there is a problem (ex. Client cannot think of what to do when their car breaks down to get to an appointment)

_____Impaired Organization

- Difficulty planning and organizing a task (ex. Client may not know how to get ready for job interview)

_____ Lack of Judgment:

- May not be able to make good decisions (ex. Client decides to lend someone their bicycle after they have already had this same individual steal their last one).

_____Emotion Dysregulation:

- May not be able to control their emotional responses (ex. Client rages and shows explosive anger).

_____Irritability:

- May get angry easy or "fly off the handle" (ex. Client may yell or use bad language with little to no apparent reason – usually associated with mental fatigue).

_____Other:

Emotional Barriers:

_____Depression:

- May feel sad, down or hopeless (ex. Client may pull away and withdraw or increase drug/alcohol use).

_____ Anxiety:

- May feel enormous fear or nervousness out of proportion to the situation at hand (ex. Client may get very anxious when needing to complete a task in a certain amount of time)
- May be more irritable, on edge, less organized and more (**ex.** Client may lash out at a loved one for no reason).

_____ Post-Traumatic Stress Disorder

- May experience current nightmares, flashbacks, paranoia, etc. (ex. Client may avoid situations where there are a lot people or noise).

_____Substance Abuse:

- May use alcohol, illicit drugs and or abuse prescription medications (ex. Client may drink alcohol excessively or use cocaine particularly when anxious).

_____ Other:

Physical:

_____ Headaches:

- May experience painful headaches of variable intensity (ex. Client may suffer from tension headaches with over-stimulation or fatigue).

_____ Balance:

- May be unable to keep body centered over feet (ex. Client may tend to get dizzy and off balance often).

_____Vision:

- May experience blurred or double vision or may have blind spots in vision (ex. Client may not see everything or may see two of everything)

_____Sleep:

- May have irregular sleep patterns, get too little sleep or too much sleep (ex. Client may have trouble falling sleep and/or staying asleep)

_____ Other:

Sincerely,

Rhiannon Edwards
Executive Director

Jason Cochran
Resource Facilitator

_____

Lance E. Trexler, PhD, HSPP, FACRM
Clinical Neuropsychologist and
Executive Director,
Departments of Rehabilitation Neuropsychology and Resource Facilitation
Rehabilitation Hospital of Indiana;
Clinical Assistant Professor,
Department of Physical Medicine and Rehabilitation,
Indiana University School of Medicine;
Fellow, American Congress of Rehabilitation Medicine

Appendix H

Pace Brain Injury Group Evaluation Form

Date: _____

How many PACE Brain Injury Education Groups have you attended? Please check only one.

Only 1 _____ 1 -5 _____ 5-10 _____ 10 or More _____

Please indicate your feelings with the following statements on the Thursday and Friday PACE Brain Injury Groups. Circle one answer.

1. **I am satisfied with the information I learned in this group.**

   Disagree Sometimes Agree

2. **I would recommend this group to others.**

   Disagree Sometimes Agree

3. **The materials I was given were easy to follow along and use.**

   Disagree Sometimes Agree

4. **The length of this group (1 ½ - 2 hours) was appropriate for this group.**

Disagree Sometimes Agree

5. **I feel better about myself after what I have learned about brain injury in this group.**

Disagree Sometimes Agree

6. **I feel I can better manage and cope with your brain injury after attending these groups**

Disagree Sometimes Agree

7. **I think I could apply what you have learned in groups to help you in your life?**

Disagree Sometimes Agree

Can you please add any comments about your experience in this group as far as what you got out of this and what were the most valuable tools to you?

_____

_____

_____

_____

Appendix I

Indiana DOC and Brain Injury Conference

September 17, 2015
Indiana Government Building South Auditorium

NOTE: Attendance is limited to 80 participants. RSVP to Fran Osburn at FOsburn@idoc.IN.gov by September 7, 2015 to confirm your participation.

Agenda

10:00 – 10:15	Opening Comments	Bruce Lemmon, Commissioner, IDOC
10:15 – 10:45	Epidemiology of Brain Injury In the DOC	Lance E. Trexler, PhD, FACRM
10:45 – 11:30	Neuropsychology of Criminal Behavior	Lance E. Trexler, PhD, FACRM
11:30 – 12:00	Questions and Answers	
12:00- 1:00	Lunch on your own	
1:00 - 1:20	The Indiana Brain Injury Grants: Vocational Rehabilitation and IDOC	Peri Rogowski, MS, Indiana VRS Fran Osburn, Superintendent
1:20-1:50	What is Resource Facilitation and What is the Evidence?	Lance E. Trexler, PhD, FACRM
1:50-2:20	The 2014-2019 Indiana Brain Injury Grant with IDOC	Peter Bisbecos, JD Lisa Osterman, MA
2:20 – 3:00	Discussion and Future DOC strategies	Peter Bisbecos, J.D. Bruce Lemmon, Commissioner, IDOC Frances Osborn, IDOC Superintendent Peri Rogowski, MS Lance E. Trexler, PhD, FACRM

Potential Attendees:
IDOC Superintendents
Indiana Parole District Supervisors
Corizon
Prosecutors
Public Defenders
Judges

IN BI RTC: Building Brain Injury Capacity Statewide through Evidence-based Research & Training

Brain Injury & the Criminal Justice System

Seminar Details

When & Where:

June 27 & 28, 2017
Indiana Government Center Auditorium
(and Conference Room A for overflow)

The seminar will be webcast LIVE. Please indicate when registering if you will attend in-person or online.
*Note: *At this time we are only able to provide continuing education for those attending in-person.*

Who should attend:

Department of Corrections staff and medical providers, judges, prosecutors, public defenders, private practice attorneys.

Why you should attend:

As many as 60% of people who are incarcerated have a history of brain injury, and perhaps as many as 95% of veterans. Brain injury is a risk factor for incarceration, and people with brain injury have more difficulties with prison adjustment. Proper diagnosis and management of symptoms is likely to improve pre- and post-release adjustment, and may decrease recidivism. **This first-of-its-kind conference** will address all of these topics and enable people working in the Indiana criminal justice system to identify brain injury, to determine its potential consequences as a cause of criminal conduct, and to make appropriate referrals for our common clientele.

Topics include:

- Brain Injury 101
- Brain Injury and Criminality: A Clinical Perspective
- Case Studies
- Screening for Brain Injury
- Criminal Justice Panel: A Legal Perspective
- Medical Aspects of TBI
- Neuropharmacology in Brain Injury
- Psychological and Behavioral Aspects of Brain Injury
- Behavioral Management of Brain Injury
- Post-Release Planning for People with Brain Injury
- Next Steps in Management of Brain Injury in The Criminal Justice System

There is no cost to attend this seminar.

Seminar Speakers

Samantha Backhaus PhD
Clinical Neuropsychologist, Rehabilitation Hospital of Indiana

Flora Hammond MD, FACRM
Physiatrist, IU School of Medicine & Rehabilitation Hospital of Indiana

Peter Bisbecos, JD
Market Innovation & Public Policy Director, Rehabilitation Hospital of Indiana

Quratulain Khan PhD, HSPP
Clinical Neuropsychologist, Rehabilitation Hospital of Indiana

Claire Brownson MA, LMHCA
Training & Education Coordinator, Rehabilitation Hospital of Indiana.

Lance E. Trexler PhD, HSPP, FACRM
Clinical Neuropsychologist, Rehabilitation Hospital of Indiana

David Certo, JD
Presiding Judge, Indianapolis Veterans Court & Criminal Court 12

Frances Osburn, MS
Superintendent, Edinburgh Correctional Facility

Andrew Fogle, JD
Marion County Deputy Prosecutor Supervisor, Corrections Division

Lisa Osterman, MA
Consultant, Community Solutions

Molly Wright, JD
Division Leader, Problem Solving Courts, Marion County Public Defender Agency

Learn more about our esteemed group of speakers from our website!

*Continuing Education

We have applied for continuing education for the following professions: *Physicians, Psychologists, Attorneys, Nurses and Social Workers*. This activity has been approved for AMA PRA Category 1 Credit™ by Indiana University School of Medicine.

Please direct any questions to:

Brain Injury Research & Training Center
@Rehabilitation Hospital of Indiana
Claire Brownson, MA, LMHCA
Coordinator of Training & Education
Claire.Brownson@rhin.com | (317) 329-2262

Register Online:

www.ResourceFacilitationRTC.com/RTC-BICJSeminar
Note: This seminar is ONLY open to invited attendees.

BRAIN INJURY IN THE CRIMINAL JUSTICE SYSTEM

June 27 and 28, 2017

Indiana Government Center Auditorium

Promoting "best practices" in brain injury education, resource facilitation and vocational rehabilitation.

Sponsored by the:

Indiana Department of Corrections • Indiana Brain Leadership Board •

Rehabilitation Hospital of Indiana Resource Facilitation Research and Training Center

DAY ONE

Time	Topic	Presenter
8:15 – 8:30	Welcome & Introductions	
8:30 – 10:30	Brain Injury 101 *Description:* This presentation will provide an overview of acquired brain injury, with an emphasis on traumatic brain injury, and ranging from mild to severe injuries. The presentation will address methods to measure severity, both in the acute and chronic stages, the course of recovery from brain injury, and brain injury as a chronic condition. *Learning objectives:* Participants will be able to: 1. Describe different methods used to determine the acute severity of a traumatic brain injury; 2. Identify three different factors that can influence recovery from a brain injury; and 3. Describe the difference between a concussion-mild traumatic brain injury versus the chronic effects of a moderate to severe traumatic brain injury	Lance Trexler, PhD
10:30 – 11:00	Break	
11:00 – 12:00	Brain Injury and Criminality *Description:* The prevalence of brain injury in the criminal justice system and the types of brain injury that may lead to criminal behavior will be the two main topics of this presentation. *Learning objectives:* Participants will be able to: 1. Describe the prevalence of brain injury in the criminal justice system, and particularly for veterans; 2. Describe the main type of brain injury that can lead to criminal behavior; and 3. Describe the effects of brain injury on prison adjustment.	Lance Trexler, PhD
12:00 – 1:00	Lunch	

1:00 – 2:00 Case Studies — Samantha Backhaus, PhD

Description:
This presentation will include a case study describing a person who had a significant legal history who unfortunately suffered a brain injury. The scope of their rehabilitation services will be described.

Learning Objectives:
By the end of this presentation, participants will be able to:

1. Better understand an example of a type brain injury and its effects on the person.
2. Better understand the type of rehabilitation services received.
3. Learn about the role of Resource Facilitation in helping an individual improve their integration into the community.

2:00 – 3:00 Screening for Brain injury — Claire Brownson, MA

Description:
This presentation will orient participants to the "OSU" and will train them how to screen for brain injury using RHI's adapted version of Dr. John Corrigan's invaluable measure: The Ohio State University TBI Identification Method + ABI. Several case studies will be reviewed to maximize training.

Learning Objectives:
By the end of this presentation, you'll be able to:

1. Identify various types of Acquired Brain Injuries (ABI).
2. Utilize the OSU-TBI screening measure,
3. Including additional items for ABI screening.
4. Detect presence of BI via case examples.

3:00 – 3:30 Break

3:30 – 4:15 Brain Injury and Criminal Justice Panel: A Legal Perspective — Peter Bisbecos, JD; Judge David Certo, JD; Andy Fogle, JD; Molly Wright, JD

Description:
This session will focus on the legal and practical consequence resulting from the developing science of brain injury identification and rehabilitation. We know that brain injury is a significant factor in criminal conduct, yet until quite recently diagnosing and treating brain injury in the general population was not on the radar of the legal community. As that is now changing, it is critically important that we identify the issues resulting from these advances and begin discussions surrounding the appropriate response when a criminal defendant or offender is diagnosed with a previously unrecognized brain injury.

Objectives:

1. Legal - Identify the potential impact of new TBI screening and treatment on legal doctrine and practical application
2. Legal - Gain perspective from the judicial, prosecution and defense perspectives
3. Public Policy – As scientific knowledge continues to evolve, and the resulting legal issues are addressed, we must still consider the public policy implications resulting from the fact that we know that people with brain injury are facing criminal charges, and that some of their conduct can now be mitigated in the future. What is the today's best public policy answer to these new developments?

4:15 – 5:00 Discussion and Closing Remarks

DAY TWO

Time	Topic	Presenter
8:00 – 8:10	Welcome and Introductions	
8:10 – 9:30	Medical Aspects of TBI TBI can be a chronic condition with different types of neurological, endocrinological, orthopedic, and psychiatric complications that can all affect the expression and level of disability associated with the injury. This talk will provide an introductory overview of these issues and the implications for medical management. *Objectives:* 1. Identify medical complications that may interfere with rehabilitation & recovery 2. Discuss surveillance, prevention, and treatment approaches to prevent secondary complications of TBI 3. Identify medications that may hinder or facilitate rehabilitation progress and outcome	Flora Hammond, MD
9:30 –10:00	Break	
10:00 –11:15	Neuropharmacology in Brain Injury Neuropharmacological management of cognitive and behavioral disturbance following TBI differs from the management of psychiatric disorders, and this presentation will provide some specific approaches along with the available evidence. *Objectives:* 1. Participants will gain knowledge of neurotransmitters functions of cognition, behavior and emotion. 2. Participants will learn the basic principles of neuropharmacologic prescription. 3. Participants will revie0w the research evidence available to support or refute the use of pharmacologic agents in brain injury.	Flora Hammond, MD
11:15 –12:00	Discussion	
12:00 – 1:00	Lunch	
1:00 – 2:00	Psychological and Behavioral Aspects of Brain Injury *Description:* In this presentation, we will review the most common cognitive disorders that follow from brain injury as well as the psychological and emotional consequences, particularly as related to psychosocial adjustment. *Learning Objectives:* Participants will be able to: 1. Identify at least three types of cognitive impairments that can follow from brain injury and their effects on participation with the criminal justice system; 2. Describe three different emotional and behavioral consequences of brain injury; and 3. Identify appropriate community based resources and types of providers to assist with the management of cognitive and behavioral impairments following brain injury	Lance Trexler, PhD
2:00 – 2:15	Break	
2:15 – 3:15	Behavioral Management of Brain Injury	Quratulain Khan, PhD

Objectives:

1. Identify barriers to effective behavior management
2. Participants will learn about general behavior approaches
3. Participants will gain knowledge of management of specific problem behaviors

3:15 – 4:15 Issues in Post-Release Planning for People with Brain Injury — Lisa Osterman, MA

Description: This presentation will highlight the challenges that returning citizens with BI face as they reintegrate into the community and discuss a pilot initiative in Marion County that seeks to identify methods and resources for connecting reentrants with critical supports and services.

Learning Objectives: By the end of the presentation, participants will be able to:

1. Name key resources and supports that reentrants with BI may need for successful community reintegration.
2. Describe existing public and private resources and supports for reentrants with BI.
3. Identify resources and supports that do not yet exist at scale, but which IDOC and partners are working to develop.

4:15 – 4:45 Next Steps in Management of Brain Injury in The Criminal Justice System and Discussion — Lance Trexler, PhD & Fran Osburn, MS

Description: We will describe possible next steps for the evolution of managing brain injury in the criminal justice system and participants are encouraged to ask questions or make recommendations for future research, training or policy in the area.

Learning objectives:
Participants will be able to:

1. Identify at least one research initiative that may develop in the area of brain injury in the criminal justice system
2. Identify at least one training and education initiative that may develop in the area of brain injury in the criminal justice system
3. Identify at least one policy initiative that may develop in the area of brain injury in the criminal justice system

Funding for this seminar is provided through the US Department of Health & Human Services, Health Resources and Services Administration Maternal and Child Health Bureau Traumatic Brain Injury Implementation Partnership Grants

Grant Number H21MCO6756: 2009-2013
Grant Number 5 H21MC269140200: 2014-2019

Brain Injury & the Criminal Justice System

June 27 & 28, 2017

Indianapolis, Indiana
Indiana Government Center

Brain Injury Research & Training Center
@Rehabilitation Hospital of Indiana
www.ResourceFacilitationRTC.com
9531 Valparaiso Court • Indianapolis, IN 46268

Seminar Objectives

At the end of this seminar, participants will be able to:

- Screen for the presence of and various types of brain injury and determine severity.
- Describe prevalence of brain injury in the criminal justice system and its role on prison adjustment.
- Give examples of rehabilitation strategies and their potential impact on legal doctrine and practical application.

Seminar Speakers

Samantha Backhaus, PhD, HSPP
Clinical Neuropsychologist, Rehabilitation Hospital of Indiana

Peter Bisbecos, JD
Market Innovation & Public Policy Director, Rehabilitation Hospital of Indiana

Claire Brownson MA, LMHCA
Coordinator of Training & Education, Rehabilitation Hospital of Indiana

David Certo, JD
Presiding Judge, Indianapolis Veterans Court & Criminal Court 12

Andrew Fogle, JD
Marion Co. Deputy Prosecutor Supervisor, Corrections Division

Molly Wright, JD
Division Leader, Problem Solving Courts, Marion Co. Public Defender Agency

Flora Hammond, MD, FACRM
Chair, IU School of Medicine; Chief of Medical Affairs, Rehabilitation Hospital of Indiana

Quratulain Khan, PhD, HSPP
Clinical Neuropsychologist, Rehabilitation Hospital of Indiana

Lance E. Trexler, PhD, HSPP, FACRM
Clinical Neuropsychologist, Rehabilitation Hospital of Indiana

Frances Osburn, MS
Superintendent, Edinburgh Correctional Facility

Lisa Osterman, MA
Director of Strategic Initiatives, Community Solutions

Session Evaluation & Continuing Education

Credit is only given to onsite attendees who sign in each day of the course; successfully complete the entire course; and evaluate the course. RHI RTC Conference Evaluations are electronic. After the conference, **you will receive an email with a link to the evaluation system.** Your opinion is important to us!

After you have competed the session evaluations, an email will be automatically generated to you. In that email, you will be able to click on the link and **print your certificate**. Call Kim Ruff at (217) 753-1190 with questions.

Physicians: The Indiana University School of Medicine is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of Indiana University School of Medicine and Rehabilitation Hospital of Indiana. The Indiana University School of Medicine is accredited by the ACCME to provide continuing medical education for physicians.

The Indiana University School of Medicine designates this live activity for a maximum of **13.25** AMA PRA Category 1 Credits™.

Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Nurses: FIRM is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.

This course is eligible for up to a total of **13** contact hours.

Legal Professionals: The Indiana Office of Admissions & Continuing Education has approved this workshop for **4.5** General and **8.6** NLS Continuing Legal Education credits. Be sure to sign the CLE sign-in sheets and include your bar number.

Brain Injury & the Criminal Justice System

Day One

8:15 AM – 8:30 AM — **Welcome & Introductions**

8:30 AM – 10:30 AM — **Brain Injury 101**

Lance Trexler, PhD, HSPP, FACRM

This presentation will provide an overview of acquired brain injury (ABI), with an emphasis on traumatic brain injury (TBI), ranging from mild to severe injuries. Also addressed will be methods to measure severity, both in the acute and chronic stages, the course of recovery from brain injury, and brain injury as a chronic condition.

Participants will be able to: Describe different methods used to determine the acute severity of a traumatic brain injury; Identify three different factors that can influence recovery from a brain injury; and Describe the difference between a concussion-mild traumatic brain injury versus the chronic effects of a moderate-to-severe traumatic brain injury.

10:30 AM – 10:45 AM — **Break**

10:45 AM – 11:45 AM — **Brain Injury and Criminality**

Lance Trexler, PhD, HSPP, FACRM

Two main topics will be discussed in this presentation: 1) Prevalence of brain injury in the criminal justice system and 2) Types of brain injury that may lead to criminal behavior.

Participants will be able to: Describe the prevalence of brain injury in the criminal justice system, particularly for veterans; Describe the main type of brain injury that can lead to criminal behavior; and Describe the effects of brain injury on prison adjustment.

11:45 AM – 12:45 PM — **Lunch** *(lunch is on your own, see your folder for a list of nearby restaurant/cafeteria options)*

12:45 PM – 1:45 PM — **Case Study**

Samantha Backhaus, PhD, HSPP

This presentation will include a case study describing a person who has a significant legal history after suffering a brain injury and the scope of his/her rehabilitation services.

Participants will be able to: Evaluate a type of brain injury and its effects on the person; Justify the type of rehabilitation services received; and Describe the role of Resource Facilitation in helping an individual improve their integration into the community.

1:45 PM – 2:45 PM — **Screening for Brain injury**

Claire Brownson, MA, LMHCA

This presentation will orient participants and provide training on how to utilize the The Ohio State University TBI Identification Method Revised: A Screening Tool for the Identification of Acquired Brain Injury (ABI). Three case studies will be reviewed.

Participants will be able to: Identify various types of acquired brain injuries (ABI); Utilize the TBI screening measure, including additional items for ABI and determine severity; and Detect presence of brain injury via case examples.

2:45 PM – 3:00 PM — **Break**

3:00 PM – 3:45 PM — **Brain Injury and Criminal Justice Panel: A Legal Perspective**

Peter Bisbecos, JD; Judge David Certo, JD; Andy Fogle, JD; Molly Wright, JD

This panel will focus on the legal and practical consequence resulting from the developing science of brain injury identification and rehabilitation.

Participants will be able to: Describe the potential impact of new TBI screening and treatment on legal doctrine and practical application; Gain perspective from the judicial, prosecution and defense perspectives; and Describe what is the best public policy answer to these new developments.

3:45 PM – 4:30 PM — **Discussion and Closing Remarks**

DAY TWO

8:00 AM – 8:10 AM **Welcome & Introductions**

8:10 AM – 9:30 AM **Medical Aspects of Traumatic Brain Injury (TBI)**

Flora Hammond, MD, FACRM

This presentation will provide an introductory overview of issues and implications for medical management of a person with TBI. TBI can be a chronic condition with different types of neurological, endocrinological, orthopedic, and psychiatric complications that can all affect the expression and level of disability associated with the injury.

Participants will be able to: Identify medical complications that may interfere with rehabilitation and recovery; Discuss surveillance, prevention, and treatment approaches to prevent secondary complications of TBI; and Identify medications that may hinder/facilitate rehabilitation progress and outcome.

9:30 AM – 9:45 AM **Break**

9:45 AM – 11:00 AM **Neuropharmacology in Brain Injury**

Flora Hammond, MD, FACRM

This presentation will provide specific approaches for neuropharmacological management of cognitive and behavioral disturbances following TBI, which differs from the management of psychiatric disorders, along with the available evidence.

Participants will be able to: Describe neurotransmitter functions of cognition, behavior and emotion; List the basic principles of neuropharmacologic prescription; and Give examples of the research evidence available to support or refute the use of pharmacologic agents in brain injury.

11:00 AM – 11:45 AM **Discussion**

11:45 AM – 12:45 PM **Lunch** *(lunch is on your own, see your folder for a list of nearby restaurant/cafeteria options)*

12:45 PM – 1:45 PM **Psychological and Behavioral Aspects of Brain Injury**

Lance Trexler, PhD, HSPP, FACRM

This presentation will review the most common cognitive disorders that follow brain injury as well as the psychological and emotional consequences, as related to psychosocial adjustment.

Participants will be able to: Identify three types of cognitive impairments that can follow from brain injury and their effects on participation with the criminal justice system; Describe three emotional and behavioral consequences of brain injury; and Identify appropriate community-based resources and types of providers to assist with the management of cognitive and behavioral impairments.

1:45 PM – 2:00 PM **Break**

2:00 PM – 3:00 PM **Behavioral Management of Brain Injury**

Quratulain Khan, PhD, HSPP

This presentation will review general approaches to management of neurobehavioral issues as well as techniques for management of specific behaviors, such as impulsivity and aggression.

Participants will be able to: Identify barriers to effective behavior management; Describe general behavior approaches; and Describe how to manage specific problem behaviors.

3:00 PM – 4:00 PM **Issues in Post-Release Planning for People with Brain Injury**

Lisa Osterman, MA

This presentation will highlight the challenges that returning citizens with brain injury face as they reintegrate into the community and discuss a pilot initiative in Marion County that seeks to identify methods and resources for connecting reentrants with critical supports and services.

Participants will be able to: Name key resources and supports that reentrants with brain injury may need for successful community reintegration; Describe existing public and private resources and supports for reentrants with brain injury; and Identify resources and supports that do not yet exist at scale, but which Indiana Department of Corrections and partners are working to develop.

4:00 PM – 4:30 PM **"Next Steps" in Management of Brain Injury in The Criminal Justice System**

Lance Trexler, PhD, HSPP, FACRM & Fran Osburn, MS

This presentation will describe possible "next steps" for the evolution of managing brain injury in the criminal justice system. Participants are encouraged to ask questions or make recommendations for future research, training or policy in the area.

Participants will be able to: Identify at least one inititative each for Research, Policy, and Training and Education that may develop in the area of brain injury within the criminal justice system.