

School Transition and Re-Entry Program (STEP)
EMS/Trauma Research Grant Project Final Report

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Introduction

Although medical treatment and survival rates of children and youth with traumatic brain injury (TBI) have improved dramatically in the last decades, long-term treatment of the behavioral, cognitive, and social needs of this population has not kept pace with medical advances. Because of the possibility of increasing consequences of the injury over subsequent stages of development (Alden & Taylor, 1997; Feeney & Ylvisaker, 1995) educators must monitor students' progress over time (Savage et al., 2001; Ylvisaker et al., 2001). Students who are identified and qualify for special education will be monitored as part of their individual education programs. To address the unique transition needs of this population, we developed and

evaluated an intervention to improve a critical component of the long-term rehabilitation of students with TBI: their transition from hospital back to school. Preliminary evaluation suggests that the School Transition and Re-Entry Program (STEP) intervention, supported by the National Institute on Disability and Rehabilitation Research (NIDRR), showed promise in improving this critical transition for students with TBI. The current project extended the RCT of STEP by continuing to track parent and teacher information about Ohio students who were currently participants in the STEP RCT.

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Executive Summary

The STEP (Student Transition re-Entry Program) model is a comprehensive hospital-to-school transition protocol that bridges the gap between hospital and school settings. Model components include linkage between: (a) a hospital and department of education (DOE); (b) a DOE contact and regional school liaison; and (c) a transition facilitator and the child and family. Child progress is then tracked over time. Preliminary results indicate that the program was beneficial for families; STEP was associated with lower parental anxiety, and higher parental satisfaction with support services for their child. The STEP program also showed promise in increasing the likelihood of identification for special education supports. Data analysis is continuing.

Information/Qualifications of the Investigators

Principal investigators include Keith Owen Yeates, Ph.D. and Ann Glang, Ph.D. Dr. Yeates is a Professor in the Departments of Pediatrics, Psychology, and Psychiatry at The Ohio State University. He is the Director of the Center for Biobehavioral Health in the Research Institute at Nationwide Children's Hospital and Chief of the Department of Psychology at Nationwide Children's Hospital. Dr. Yeates is involved in federally-funded research on the outcomes of childhood brain disorders and has held an Independent Scientist Career Development Award from the National Institutes of Health. Dr. Glang is a senior fellow at the Center on Brain Injury Research and Training at the Teaching Research Institute, Western Oregon University. Her work has focused on childhood brain injury prevention as well as on helping educators and families support children with moderate-severe brain injuries.

Review of the Literature

Traumatic brain injury (TBI) is reported to be the leading cause of death and disability for children aged 1 to 19 in the United States (CDC, 2004). Long-term follow-up studies of children conducted during the K-12 school years suggest that problems associated with TBI tend to persist or worsen as children progress through school (Fay et al., 1994; Hawley, 2003; Jaffe, Polissar, Fay, & Liao, 1995; Taylor et al., 1999), and continue after graduation (Todis, Glang, Bullis, Ettel, & Hood, 2011). As they fall further behind their peers academically, behaviorally, and socially, children and youth with TBI become vulnerable to multiple risk factors associated with school failure and aggressive behavior in the general adolescent population (e.g., Dishion, Nelson, & Yasui, 2005; Van Lier & Crijnen, 2005).

In 1991, recognizing the unique needs of this growing population, TBI was added as a special education eligibility category under IDEA. In the years since, there has been an increasing concern that the educational needs of these children are not being met (Ylvisaker et al., 2001). Perhaps the most important factor was the weak or non-existent link that generally exists between the hospitals who treat these students following injury and the schools who educate them—in terms of both their respective understanding of one another's worlds and their mutual communication and coordination efforts (Blosser & Pearson, 1997; DiScala, Osberg, & Savage, 1997; Lash & Scarpino, 1993). A National Pediatric Trauma Registry study that tracked children ages 5-19 who were hospitalized with TBI in participating trauma centers and children's hospitals across the U.S. between April 1994 and January 1999 found that 13.2% had documented cognitive impairments resulting from their brain injury at the time of discharge, and 11.6% had behavioral impairments; yet medical staff recommended less than 1% of these

children for referral to special education (DiScala, 2000). In our *Back to School* sample, over 75% of whom experienced severe TBI, only 45% of parents report that the hospital and school communicated about their child's injury.

For students who have sustained a brain injury, proper identification is an essential first step to insuring appropriate educational services. While knowing a student has TBI does not guarantee that appropriate services will follow, we firmly believe that NOT knowing decreases the likelihood that educational services will be tailored to the student's specific needs. Findings from the *Back to School* project suggest that many students with TBI are currently experiencing difficulty in one or more school domains, yet are not identified for special education and in fact are not receiving school services to address their problems (Glang, Dise- Lewis & Tyler, 2006). In general, the programs and supports provided to children with TBI in schools are limited and fail to provide appropriate, long-term levels of assistance (Hawley, Ward, Magnay, & Mychalkiw, 2004; Taylor et al., 2002).

To address the unique transition needs of this population, we developed and evaluated in a multi-state randomized clinical trial (RCT), an intervention meant to improve the transition from hospital back to school. The School Transition and Re-Entry Program (STEP) intervention was designed to be a relatively simple program that links children with TBI who are being discharged from hospitals to their local schools via referral to a centralized network of facilitators maintained by their state's Department of Education. Preliminary results suggested that the School Transition and Re-Entry Program (STEP) intervention, supported by the National Institute on Disability and Rehabilitation Research (NIDRR), showed initial promise in improving this critical transition for students with TBI. Our results suggest that students in the STEP intervention group receive more services than those students in usual care. In addition,

parents of students in the STEP group report greater satisfaction with academic and other services received, and report greater involvement in the special education process.

The Current Project

The current project extended the RCT of STEP by continuing to track parent and teacher information about Ohio students who were currently participants in the STEP RCT. The additional data collected at approximately 18 months to 2 years post-injury allowed analysis of changes in student characteristics and needs over time, and the schools' response to those changes. Ohio sites provided the largest group of STEP participants (See Table 1). The project was consistent with Priority 3-B (Rehabilitation): "Projects that focus on risk factors identified or interventions performed in the EMS and/or acute care settings that affect the immediate post hospital period with emphasis on discharge planning and solid linkages to needed community services or access to rehabilitation services".

Design. The efficacy study employed a randomized control trial in which participants were randomly assigned to either the STEP or Usual Protocol condition. Participants in the Usual Protocol condition received the usual care provided by the hospital.

Sample. Research participants were recruited from 5 children's hospitals in Oregon, Colorado and Ohio. The 107 participants were 70% male, and most sustained moderate (49%) and severe injuries (48%). The largest group of participants were high school students (42%), followed by students K through grade 5 (37%) and middle school students (22%). Sample ethnicity was mostly White (80%), with 10% African American, 4% Hispanic, 3% Native American, 1% Asian, and 1% Biracial. A large percentage of the sample came from the Upper family income tract (27%), with 15% Moderate income, 55% Middle income, and only 3% from

the Low income tract. Similar to CDC percentages, most injuries were due to motor vehicle crashes (34%), pedestrian/MVA (13%), and sports/recreation accidents (30%). About half (47%) received inpatient rehabilitation, and 8% reported previously receiving special education support services. By the third data collection point (Time 3; approximately 24 months post-injury), many participants were lost to follow-up for reasons including: lack of current contact information, lack of response to requests for further participation, or expressed lack of interest in participating. In a few cases, participants withdrew from the project stating that their child’s brain injury was no longer an issue. As a result of the difficulty in participant retention, the small sample size precludes a meaningful between group comparison at Time 3; descriptive statistics are summarized for all Ohio participants at this time period.

Of note is that the attrition rates for the Ohio sample were lower than the total sample attrition at each time point. From Time 1 to Time 2, 12% of Ohio participants were lost to attrition, from Time 2 to Time 3 attrition equaled 20%, and at Time 3 the attrition rate was 65%.

Table 1.

School Transition and Re-Entry Program (STEP) 2013 Participant Count Across Time Points

	<i>Total</i>	<i>%</i>				<i>Ohio</i>
<i>Time point</i>	<i>sample</i>	<i>Attrition</i>	<i>Columbus</i>	<i>Cincinnati</i>	<i>Cleveland</i>	<i>Total</i>
<i>T0: Enrollment</i>	135	<i>na</i>	53	20	5	78
<i>T1: 1 mo.</i>	107	21%	46	21	3	69
<i>T2: 12 mo.</i>	88	35%	38	14	3	55

<i>T3: 24 mo.</i>	<i>39</i>	<i>71%</i>	<i>16</i>	<i>3</i>	<i>0</i>	<i>19</i>
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Measures. At intake parents provided demographic and medical information; parents and educators completed the following measures at one month, 12 months, and 24 months post-injury: self-report measure used to assess current feelings of anxiety; ratings of their child’s participation and functioning in their home, neighborhood and school; ratings of their child’s executive function, and a survey of their concerns, support services their child received at school, and satisfaction. Educators completed a test of knowledge of brain injury, and rated students’ behavior, school functioning, and types of services received.

Analysis of Findings

Findings suggest that among students who do not receive hospital rehabilitation services, students receiving STEP service were identified more often for special education services than those who did not receive systematic transition. Furthermore, while students in the STEP group received the same number of services, parents in the STEP group were more satisfied with their overall school experience (48%) than were parents who did not receive the STEP support (21%). There were statistically significant differences between STEP and usual care condition in parent satisfaction with vision/hearing services ($X^2 = 8.19, p = .042$) and physical/motor services ($X^2 = 8.84, p = .032$).

At one year follow-up, among the whole sample (N = 107; those who did and did not receive inpatient rehabilitation), parents who received STEP support reported statistically significantly lower State Anxiety ($t(84) = 2.07, p = 0.04$) than did parents who did not receive the intervention. Group differences in satisfaction with academic services approached statistical

significance, with 20% of STEP parents compared with 4% of usual care parents reporting satisfaction with their child's academic support ($X^2 = 8.48, p = .07$). Further, significantly more STEP parents reported "some school staff" were aware of their child's TBI than did usual care parents (STEP parents 51% vs. usual care parents 25%; $X^2 = 7.77, p = .05$). STEP parents also rated a broader range of school staff as "especially helpful" than did usual care parents, with STEP parents endorsing five of seven types of school personnel as helpful vs. usual care parents endorsing three of seven).

There were no statistically significant differences between conditions in mean number of services students received at Time 2 (students with inpatient rehab: STEP $M = 6.96, SD = 5.71$, Usual Care $M = 5.47, SD = 4.02$; students without inpatient rehab: STEP $M = 1.30, SD = 2.35$, Usual Care $M = 1.61, SD = 2.64$).

At Time 3, the study retained a sample size of $N = 40$ (STEP = 23, Usual Care = 17). At this time 60% of participants' parents reported having academic concerns about their child. An equal percentage reported receiving support services from their school, and about 87% of those whose child received support services said they were satisfied or very satisfied with the school's support. About 35% of the parents reported their children were on an IEP, while 10% reported their children were on a 504 plan of support at two years post-injury.

Two statistically significant differences between conditions were found when alpha was adjusted to $p < .10$ (up from the *a priori* criterion of $p < .05$). These included STEP parents' report of a higher number of school personnel they found helpful, $X^2(3) = 6.60, p = .08$; and STEP parent reported greater satisfaction with their child's 504 plan, $X^2(2) = 4.92, p = .08$. However, with the small sample size at Time 3 ($N = 40$) results should be interpreted with caution.

Ohio 24 month post-injury follow-up. The Ohio sample at Time 3 consisted of 19 participants (STEP = 10, Usual Care = 9). Compared with the whole sample, a higher percentage of Ohio participants' parents, (about 75%) reported having academic concerns about their child. An equal percentage reported their child received academic support services; about two thirds of these parents said they were satisfied or very satisfied with the academic support services, compared with 87% of the whole sample. In terms of types of support, half of the participants received support through placement in a resource room or learning center, while about one fourth received small group instruction in the regular classroom. One quarter of these students received extra help from the teacher outside of class, peer assistance, and restrictions on contact sports participation, and two thirds received extra time for tests. One third received a modified schedule. Overall, 75% of Ohio parents reported that they were satisfied or very satisfied with the degree to which services met their child's needs, and an equal percentage found someone at school was helpful. Most often reported as helpful by parents were the classroom teacher, the school counselor and the special education teacher. With regard to formal special education services, about 50% of the participants were currently on an individual education plan, and of these, half were identified in the category of Traumatic Brain Injury. Most of the parents with children on IEPs expressed that they were satisfied or very satisfied with their child's IEP, and their own involvement with the program. Similar to the whole sample, 10% of parents reported their child was on a 504 plan at Time 3, that they were satisfied or very satisfied with the 504 plan, and that they were satisfied with their involvement. Although it is not possible to know services received for participants lost to follow-up, about half of those who responded were receiving some type of formal or informal school support.

Conclusions

The STEP intervention appears to improve the link from hospital to school previously available only to students receiving rehabilitation services. Further, parents who received the STEP intervention benefitted from the program in the form of significantly lower anxiety than did parents who received usual care. Further analyses for the effects of the STEP randomized controlled trial are currently in process, and these results represent only the first of such results obtained. Most of the teacher observations of student behavior and functioning have yet to be analyzed, specifically the School Social Behavior Rating Scale (teachers), Child Behavior Checklists (Achenbach; parents and teachers), Brain Injury Partners (advocacy skills for parents), and Teacher TBI Knowledge Survey (teachers). Further, descriptive information about the school status of students at one year follow-up, including grade point average, office discipline referrals, IEP goals, and standardized test scores obtained through school records have yet to be examined.

Dissemination

Dissemination efforts on the status of the intervention, including reports of preliminary findings, occurred while data from the intervention were being collected and analyzed. Listed below are 2012-13 publications and presentations on the STEP study.

STEP Publications

Glang, A., Todis, B., & Ettl, D. (2013). Bridging the hospital to school gap: The School Transition and Re-Entry Program (STEP). *Brain Injury Professional*, 9(4), 14-16.

STEP presentations from Center on Brain Injury Research & Training

Glang, A., Todis, B., & Ettel, D. *Empirically-Based Interventions to Improve Cognitive, Behavioral, and Academic Outcomes Following Pediatric TBI*. Federal Interagency Conference on TBI. Bethesda, MD: June 2012.

Glang, A. *Back to School: Results from a multi-site trial on the school transition and re-entry program*. Invited presenter. Pre-conference workshop, North American Brain Injury Society conference. Miami, FL: September, 2012.

Glang, A. & Ettel, D. *Evidence-based hospital-school transition model for children with TBI*. Invited presenters. Pre-conference workshop, American Congress of Rehabilitation Medicine annual conference. Vancouver, BC, Canada: October, 2012.

Ettel, D. & Nowatzki, M. *Strategies for Assessment, Accommodations and IEP's for Students with TBI*. Presented at the Ohio Concussion Awareness and Low Incidence conference. Columbus, OH: November, 2012

Ettel, D. *Evidence-based hospital-school transition model for children with TBI*. Presented at the Association for Educators of Children with Medical Needs. Portland, OR: November, 2012

References

Alden, J. & Taylor, H.G. (1997). Age-related differences in outcomes following childhood brain insults: an introduction and overview. *Journal of the International Neuropsychological Society*, 3 (6), 555-67.

Blosser, J., & Pearson, S. (1997). Transition coordination for students with brain injury: A challenge schools can meet. *Journal of Head Trauma Rehabilitation*, 12(2), 21-31.

- Centers for Disease Control (2004). *Traumatic Brain Injury (TBI): Incidence & Distribution* Retrieved from <http://www.cdc.gov/node.do/id/0900f3ec8000dbdc/aspectId/A0400020>
- DiScala, C. (2000). Personal communication and email with Carla DiScala, December 2000.
- DiScala, C., Osberg, J.S., & Savage, R.C. (1997). Children hospitalized for traumatic brain injury: Transition to postacute care. *Journal of Head Trauma Rehabilitation, 12*(2), 1-10.
- Dishion, T.J., Nelson, S.E., & Yasui, M. (2005). Predicting early adolescent gang involvement from middle school adaptation. *Journal of Clinical Child & Adolescent Psychology, 34*(1), 62-73.
- Fay, G.C., Jaffe, K.M., Polissar, N.L., Liao, S., Rivara, J.B., & Martin, K.M. (1994). Outcome of pediatric traumatic brain injury at 3 years: A cohort study. *Archives of Physical Medicine and Rehabilitation, 75*, 733-741.
- Feeney, T.J. & Ylvisaker, M. (1995). Choice and routine: Antecedent behavioral interventions for adolescents with severe traumatic brain injury. *Journal of Head Trauma Rehabilitation 10*(3), 67-86.
- Glang, A., Dise-Lewis, J., & Tyler, J. (2006). *Identification and Appropriate Service Delivery for Children who have TBI*. 2nd Federal Inter-agency Conference on TBI, Bethesda, MD.
- Hawley, C.A. (2003). Reported problems and their resolution following mild, moderate and severe traumatic brain injury amongst children and adolescents in the UK. *Brain Injury, 17*(2), 105.

- Hawley, C.A., Ward, A.B., Magnay, A., & Mychalkiw, W. (2004). Return to School After Brain Injury. *Archives of Disease in Childhood*, 89, 136-142.
- Jaffe, K.M., Polissar, N.L., Fay, G.C., & Liao, S. (1995). Recovery trends over three years following pediatric traumatic brain injury. *Archives of Physical Medicine and Rehabilitation*, 76, 17-26.
- Lash, M., & Scarpino, C. (1993). School reintegration for children with traumatic brain injuries: Conflicts between medical and educational settings. *NeuroRehabilitation*, 3(3), 13-25.
- Savage, R.C., Pearson, S., McDonald, H., Potoczyn-Gray, A., & Marchese, N.M. (2001). After hospital: Working with schools and families to support the long term needs of children with brain injuries. *NeuroRehabilitation*, 16(1), 49-58.
- Taylor, H.G., Yeates, K.O., Wade, S.L., Drotar, D., Klein, S., & Stancin, T. (1999). Influences on first-year recovery from traumatic brain injury in children. *Neuropsychology*, 13, 76-89.
- Taylor, H.G., Wade, S.L., Stancin, T., Yeates, K.O., Drotar, D., & Minich, N. (2002). A Prospective Study of Short- and Long-Term Outcomes After Traumatic Brain Injury in Children: Behavior and Achievement. *Neuropsychology*, 16(1), 15-27.
- Todis, B., Glang, A., Bullis, M., Ettel, D., & Hood, D. (2011). Longitudinal Investigation of the Post-High School Transition Experiences of Adolescents with Traumatic Brain Injury. *Journal of Head Trauma Rehabilitation*, 26(2), 138-149.
- Van Lier, P.A.C., & Crijnen, A.A.M. (2005). Trajectories of peer-nominated aggression: risk status, predictors and outcomes. *Journal of Abnormal Child Psychology*, 33(1), 99-112.

Ylvisaker, M., Todis, B. Glang, A., Urbanczyk, B., Franklin, C., DePompei, R., Feeney, T., Maher Maxwell, N., Pearson, S., & Tyler, J. (2001). Educating students with TBI: Themes and recommendations. *Journal of Head Trauma Rehabilitation, 16*(1), 76-93.