



traumatic
brain injury




injury care



safe and
active
transport



violence



global injury

The Teach TBI Project: **Washington State Needs-Assessment of Traumatic Brain Injury in Public Schools**

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Executive Summary

This statewide, pilot study was conducted from January 2015-June 2015 to assess the landscape of needs among educators and parents of children with traumatic brain injury (TBI).

Quick summary of main points:

- Differences in communication preference exist among parents of children with varying degrees of TBI severity that could allow for more targeted and efficient relaying of resources and information.
- Schools with formal guidelines in place to inform a student's transition back to school following TBI were more likely to provide accommodations in line with best practices.
- About two thirds of teachers had no formal training on TBI. Among those who did receive training on TBI, many did not receive training that went beyond first aid stabilization of a head injury. In addition, after a TBI, a student's teacher remains responsible for that student's education regardless of whether the teacher has TBI-specific training.
- Children with a mild-to-moderate TBI experience more barriers to receiving accommodations and support from school staff compared to children with more severe forms of TBI.
- Surveyed parents, teachers, school nurses and administrators agreed on the following recommendations for improving a student's transition back to school following TBI: provide best practices and recommendations, provide a sample policy for easy adoption, improve communication between transition group members and provide an opportunity for continuing education credits for teachers on TBI.

Introduction

Background

Traumatic brain injuries (TBI) can result in various short and long term impairments to normal brain function and quality of life. (CDC, n.d.; Glang et al., 2004; Halstead et al., 2013; DeMatteo et al., 2015; Majerske et al., 2008; Moser et al., 2012) In 2010 alone, the estimated total cost of non-fatal TBI in the United States was over 87 billion dollars. (CDC WISQARS) Between 2002-2006 there were, on average, 51,000 TBI-related deaths and 275,000 cases of TBI requiring hospitalizations per year. (Faul et al., 2010) These numbers do not include many sports-related concussions that may go undiagnosed as TBIs and other TBI that is treated in outpatient clinics or physician offices. Children, especially children four years old and younger, and young adults are at highest risk for a TBI. (Faul et al., 2010) There are currently an estimated 390,000 individuals with TBI in grades K-12, only about an eighth of whom are receiving appropriate services. (Glang et al., 2004) Providing appropriate accommodations and services to these children injured early in life is critical for supporting their recovery and development and increasing their capacity for higher education and ability to work later in life.

Despite many students being properly diagnosed with TBI and qualifying for academic accommodations, there are several barriers to receiving those accommodations, including insufficient communication and lack of training among educators. School staff often rely on

parents of injured students to inform them when a diagnosis is made, many of whom may not know that such an announcement is necessary. As a result, school staff may not become aware of a student's TBI until a great amount of time has passed, if they are informed at all. (Glang et al., 1996) Further, when schools are informed, the information may not be disseminated to the staff members responsible for managing the student's new academic or psychosocial school needs.

Of those educators who are notified of a student's TBI, many lack TBI-specific training that would inform them of how to best support such an injured student. This may be an availability issue as nationwide, only 10 states offer teachers pre-services courses to teachers that focus on TBI and the TBI specific training is included in the curriculum of only 8% of graduate-level special education programs. (Glang et al, 2004) Without TBI training, teachers may be unable to recognize certain difficulties as TBI symptoms and may not understand how to accommodate those symptoms that are properly recognized; tailored lesson plans, gradual re-entry, and other helpful measures may be less likely to be offered. TBI-specific training for educators could, therefore, improve TBI symptom recognition and accommodation as well as inform curriculum adjustment to best support the student in a "Return to Learn" support model. (DeMatteo et al, 2015)

The symptoms experienced by TBI-inflicted students vary widely, each of which may affect the student's ability to learn, behave in a manner appropriate for their age, and socialize within the school setting. While many symptoms only seem problematic while the student is in recovery, the student may experience the effects of the injury for months afterward, depending on the severity of the TBI and how well it was managed immediately after it occurs. (DeMatteo et al., 2015; Halstead et al., 2013; Moser et al., 2012) Possible symptoms include cognitive impairments, such as problems with memory and attention span, visual-spatial difficulties, executive dysfunction, including organizational, planning, and self-monitoring difficulties; and decreased intellectual functioning in general (CDC, n.d.; Halstead et al., 2013; DeMatteo et al., 2015; Majerske et al., 2008). Emotional and behavioral symptoms may develop as well, including acting disinhibited, irritable, overly emotional or otherwise socially inappropriate. (CDC, n.d.; DeMatteo et al., 2015; Glang et al., 2004; Majerske et al., 2008) These behaviors are often confusing and difficult to manage for untrained educators and other school professionals.

If a student's needs are acknowledged, formal accommodations for students with TBI can be defined and developed through temporary individualized healthcare plans (IHP), 504 plans, and individualized education plans (IEP), depending on the necessary timeframe. IHPs can offer the immediate accommodations while a student is waiting for a 504 or IEP assessment. Although IHPs do not normally include academic accommodations, they can include such guidelines as allowing the student to take breaks, providing a less stimulating environment, and removal from physical education or other physical activities. Academic accommodations can be implemented with a 504 plan, but only after an assessment is completed by school staff which can delay its implementation. 504 plans are meant to be both flexible and temporary. Should a student expect to need accommodation on a more permanent basis, the student may be assessed to qualify for special education. Once a student qualifies for this level of accommodation, school staff may take up to 30 days to develop the corresponding IEP. Because of the time delays caused by the assessment and plan development process, IHPs are necessary to provide accommodations short-term. However, unlike 504 plans and IEPs, which must be strictly followed by school staff, other

forms of accommodation are given at the discretion of educators and other staff members, leaving much room for gaps in accommodation. Accommodations that would be provided for fatigue, concentration, and emotional symptoms are especially likely to be omitted, as these symptoms are not consistently recognized as symptoms of TBI. (DeMatteo et al., 2015)

The Washington State DSHS commissioned the current six-month pilot study. In the following report we present findings from a survey of Washington State school administrators, educators, nurses and parents to assess their experiences transitioning students to school after TBI. Our results focus on the accommodations given to students with TBI, the processes by which schools provide such accommodations and the opinions offered by parents and school staff members with experience managing the education of students with TBI. The overarching goal of the project was to gain an understanding of current practices and make recommendations that might improve student transitions to school after TBI.

Best Practices

In order to provide a background on the topic and to assess the quality of accommodations provided to students with TBI, we conducted a literature review of best practices.

Transition Team

A team designated to guiding the transition of students with TBI back to learning has been suggested by Glang and colleagues (2004, 1996) and DeMatteo and colleagues (2015) as a way to improve services for students with TBI while at the same time easing the burden placed on school staff members, who may not have the time for specialized training or to spend additional time with injured students. The results of this survey provide further support for such a recommendation. Dedicating a set of professionals to these tasks would allow school staff to focus more energy on their regular responsibilities and decrease the chance of neglecting other, non-injured students. Learning all of the intricate needs of students with TBI can be very time-consuming and mentally taxing, which may place an unrealistic demand on the majority of educators. The availability of a team that can guide staff through more complicated situations as they arise would make more basic education in TBI sufficient for regular staff members.

The “TBI Team Model”, designed and utilized in Iowa, Kansas, and Oregon, provides such a statewide designated team of consultants to support the schools in their respective states. (Glang et al, 2004) These teams educate school staff members as needed, including through workshops, advise schools on a continuous basis, and provide resources to schools and parents of injured students. Because such existing teams work in the communities as well as in each of their state’s respective schools, the teams also have the advantage of raising awareness of the needs of students with TBI. (Glang et al, 2004)

Trainings offered to school staff by transition team members would be ongoing to ensure that the information provided is the most updated evidence-based recommendations available. (Glang, 2004) Periodic training sessions would also meet the challenge of consistently educating new staff members as well as provide refreshers to any teacher who may have recently had a student with TBI enter the classroom. (Glang, 2004) Glang and colleagues (1996) state that parents should also be encouraged to attend any trainings provided to school staff. Participating in such training sessions might help through both educating the parents on the new needs of their

children and their rights as the children's caretakers, as well as providing an appropriate setting to open a dialog between parents and school staff members regarding the specific needs of each child. (Glang et al., 1996)

In order to ensure that the knowledge provided to both school staff and parents through the transition team is thorough and appropriate to each given situation, members of the team should be chosen with consideration of each member's professional specialty. (Glang, 2004) As the team members would be forming goals for school staff as well as advice during consultations, the transition team operating in Oregon requires educator team members to be based in schools to keep their expectations realistic. (Glang, 2004) Similarly, Glang and colleagues (2004) assert that it is helpful for such a team member to also be a parent of a child with TBI as such a member would be understanding to the needs and stress of the parents and would be able to express those needs to school staff members in a way to which they would be receptive. Regardless of background, however, each member of the transition teams are required to undergo a stepped training course to ensure the consistency and thoroughness of knowledge. (Glang, 2004). This training consists of a series of knowledge-based workshops followed by a mentorship program and concluding with a system of continuous support, which includes ongoing training to maintain competency.

Gradual "Return to Learn"

Cognitive rest in the early stages of recovery from TBI has been recommended through the guidelines of several medical societies. (as cited by Brown et al, 2014) Although an emphasis is typically placed on limiting physical activity after TBI, high levels of overall activity, including both cognitive and physical activity immediately after a brain injury is associated with an increase in concussion symptoms and reduced cognitive performance. (Majerske et al., 2008) Returning to intellectually demanding environments such as classrooms too soon may cause a student's TBI symptoms to worsen and prolong recovery. (DeMatteo et al, 2015)

The general recommendation for cognitive rest after TBI is one week. (Gibson et al., 2013; Moser et al, 2012) This rest period is associated with increased cognitive functioning, including in verbal memory, processing speed, and reaction time. (Moser et al, 2012) Although cognitive rest immediately following the injury is ideal, Moser and colleagues (2012) found evidence that a week of cognitive and physical rest later in the recovery, perhaps as late as a month after injury, is beneficial for recovering cognitive function. As this would be helpful information for students who are not diagnosed immediately, more research should be done on the timing of a rest period. This would be of particular interest to students who may have to consider the demands of their schoolwork while determining the most effective plan for recovery.

In order to find a proper balance between recovery and academic responsibilities, acknowledgements must be made regarding what is necessary for cognitive rest and what is excessive. Because time away from school can be harmful to a student's academic progress, rest beyond the amount necessary should be avoided. In addition, complete cognitive and physical rest may not be as beneficial to recovery as light activity. When compared to high activity and complete abstinence from activity, Majerske and colleagues (2008) found that light activity had the strongest association with better cognitive functioning after TBI. This partially agrees with another study's finding that individuals with TBI who participated in no activity, low activity,

and moderate activity had similar rates of recovery when compared to those who participated in high levels of activity after TBI. (Brown et al., 2013) When considered together, these results might signify that complete cognitive rest during the entire recovery period is not necessary, as it is possible that only high levels of cognitive activity significantly increase symptom duration. Further, especially for prolonged recovery, complete cognitive rest may be unrealistic for students who are accumulating work during their leave and may lead to a lack of compliance to recommendations for rest. (DeMatteo et al, 2015)

Light activity may be achieved through gradually bringing the student back to the school environment. After a week of cognitive rest, the school setting may be beneficial to a student who is still in recovery from TBI by reducing stress, not only by decreasing the amount of work that would need to be made up after returning to school later, but also by beginning to return to normalcy. (DeMatteo et al, 2015; Gibson et al., 2013) Although students with TBI may not be ready to return entirely to their normal workload and class schedule, returning to school and the learning environment for at least part of the day (or full days alternating with rest days) gives the student a sense of routine and allows the student to return to existing social networks and other supportive figures, such as friends and teachers. (DeMatteo et al, 2015; Gibson et al., 2013) Both the regained sense of routine and socialization may help the student cope more effectively with the situation, which would promote recovery. (DeMatteo et al, 2015) Steps must be taken, however, to ensure that returning to school does not hinder the cognitive healing process by putting too much mental stress on injured students before they are ready. DeMatteo and colleagues (2015) encourage waiting until the student's brain is fully healed before returning to active learning and allowing frequent breaks as needed from the stimulating environment. What each student with TBI is expected and allowed to do while gradually returning to school should be individualized based on the student's symptoms and combined with a "Return to School" (RTS) program to ensure full recovery. (DeMatteo et al, 2015)

The RTS protocol developed by DeMatteo and colleagues (2015) provides an example of a gradual Return to Learn program that is both evidence-based and takes students' individual needs into consideration while maintaining structured goals. The protocol follows five stages, with each stage after the first beginning when the child stops demonstrating symptoms when faced with each stage's level of activity: 1) "Brain Rest--No School": complete cognitive rest (1-2 weeks); 2) "Getting Ready to Go Back": light activity, adjusting for demonstrated symptoms (up to 2 weeks); 3) "Back to School/ Modified Academics": shortened or alternating school days, attending less stressful classes and resting as needed (days to months); 4) "Nearly Normal Routine": full school days and as much work as the student is capable (unspecified timeline); 5) "Full Activation": complete return to normal (indefinite). (DeMatteo et al, 2015, pp.4-5)

In order to provide the best support students with TBI, more research is needed on recovery from brain injury to develop recommendations such as the protocol described above in addition to better training for those who are in charge of the student's care. This includes parents and school staff as well as healthcare workers. Perhaps due to a lack of current research on how to best facilitate recovery from TBI or a lack of available TBI-specific training, several healthcare providers may not be providing proper recovery instructions to parents of children with TBI. (Arbogast, 2013) In one study, despite 64.3% of the sampled providers citing cognitive rest as a proper treatment for TBI, only 11% of the sampled pediatric patients received instructions regarding cognitive rest during their initial medical visit after the injury. (Arbogast, 2013)

Further, only 2% of the providers in the same study were able to give detailed instructions of how implement brain rest within their patients' treatment plans. (Arbogast, 2013) This is concerning considering pediatric patients and their parents rely on instructions from their healthcare providers to treat the child's TBI and resulting symptoms properly. Perhaps a barrier to providing such specific treatment plans regarding rest stems from "cognitive activity" being difficult to quantify. (Brown et al., 2013) This likely poses both a challenge to researchers responsible for providing current evidence for recommendations as well as to healthcare providers who may have difficulty clearly describing how much cognitive activity a child with a concussion should be limited to during recovery, including when the child should be allowed to return to school.

Follow-Up System

A system to follow-up with students after injury is recommended to monitor the progress and accommodations for students with TBI. (Dettmer et al, 2014) This would be especially helpful for students who suffered their TBI at a very young age and who may need additional accommodations put in place several years after their TBI for newly recognizable symptoms. Should this system be passed to schools to which injured students transfer as they progress through elementary, middle, and high school, it would also ensure that each school the students attend receives notification of their history of TBI. Brown and colleagues (2013) also suggest that more frequent and regulated follow-up with TBI patients would improve data collection, particularly with regard to length of symptom duration, and would therefore improve evidence for practice recommendations.

Study Objectives

The main project aim was to assess the knowledge, attitudes, and beliefs about TBI within the Washington State school system and among the parents of children with TBI to inform the development of recommendations for improved transitions to school for children with TBI. Our secondary aim was to determine whether a teacher's knowledge of TBI symptoms impacted the type of accommodations the teacher chooses to provide the student.

Methods

Institutional Review Board exempt status was obtained from the University of Washington Human Subjects Division.

Sampling

We used the National Institutes of Health funded online surveying platform designed for HIPAA compliant, institutional research called REDCap to survey Washington State teachers, school nurses, school administrators and parents of children with TBI. Questions were aimed at assessing their knowledge, practices, and recommendations for improving care for students returning to school following a TBI.

Schools were selected for participation using a random sample of all public schools in Washington State. The list of total public schools K-12 was supplied by the Office of the

Superintendent of Public Instruction (OSPI), which is the agency that oversees public instruction in Washington State. Schools were excluded from the pool of eligible schools if instructors did not have regular, in-person interaction with their students (virtual learning programs, homeschool supplements, etc), the school served a special population (detention institutions, group homes, etc), the school was based in a college setting, or if the school did not teach students in grades 6-12. Because the literature asserted that many cognitive symptoms do not become recognizable until a child with TBI reaches middle school and therefore more accommodations are likely to be deemed necessary in grades 6-12 than grades 5 and below, we did not survey schools who did not teach grade 6 or higher. (Glang et al, 2004)

The remaining 1,379 eligible schools (including 46 that were later found to fall into exclusionary criteria) were then divided into the following eight groups based on the State's school-type designation: Vocational Schools, Re-Engagement Schools, Tribal Schools, Alternative Schools with >50% funding from State, Alternative Schools with <50% funding from State, K-12, Elementary Schools, Middle Schools, and High Schools. This was done to explore our initial assumption that school staff at one type of school may respond differently to a student with TBI than staff at other types of schools and to ensure an equal distribution by type of school in our responses.

Within each group, schools were labeled as rural or urban using the WA State DOH Assessment Guidelines and designations of each school's county. Clark, Island, King, Kitsap, Pierce, Snohomish, Spokane and Thurston were classified as urban while the remaining 31 counties were classified as rural. We sampled schools in blocks of 10 from each school type and rural/urban category, replacing those who declined to participate with the next school in the block. (See Figure 1). We aimed to enroll 30-40 schools for participation, using a prior Washington State assessment of school policy on TBI conducted that enrolled 20 schools total as a guide. (Rivara et al., 2014)

We contacted a total of 254 schools, 208 of which were confirmed as eligible and invited to participate (208/1333 eligible schools in WA- 15.6%). Forty-six of those schools contacted to participate were then found to be ineligible and excluded. Of the 208 invited schools, 50 (24.0%) agreed to some level of participation in the assessment. Thirty-three schools (66.0% of participating schools) agreed to full participation, which involved distributing surveys to teachers, a school nurse, and a school administrator. The remaining 17 schools agreed to partial participation, which involved distributing the survey only to a school nurse or to a nurse and administrator. Due to study timeline constraints, after we enrolled the first 19 schools, we invited all not yet included eligible Seattle Schools to participate (29 schools). Seattle schools accounted for two of the 33 total schools enrolled for full participation and four of the 17 enrolled for partial participation. Of all enrolled schools, 28 were located in urban areas, 22 in rural areas, and were otherwise geographically diverse, representing a total of 17 of 39 WA counties (43.5%). (See Table 1 below for survey responses by school type, Figure 2 for a flow chart of the recruitment process and Figure 3 for a map of geographic distribution of enrolled schools.)

Parents were recruited through the Brain Injury Alliance of Washington (BIAWA), who posted a flyer on their Facebook page on March 17, 2015 and April 17, 2015, and through school nurses who emailed our recruitment materials directly to parents of children with TBI. Children's

Hospital Division of Rehabilitation Psychology also posted flyers and spoke to their eligible parents about our study. Because the study was focused on children who would have been able to attend school (K-12) following their injury, we included only parents of children who were diagnosed with a TBI prior to age of 18 years. (See Figure 2.)

In addition, the Office of the Superintendent of Public Instruction for Washington State (OSPI) emailed our nurse survey, teacher survey, and administrator survey to all WA State public school nurses and teachers on their listserv March 9, 2015 and again on April 16, 2015. They also presented our project at the School Nurses Association of Washington (SNOW) bi-annual conference on March 21, 2015 with encouragement to participate. (See Figure 2.)

Our final sample included 48 schools and responses from 14 administrators, 83 teachers, 30 parents, 40 school nurses and 17 district nurses. (See Figure 2.)

Study Procedures

Study materials and surveys were developed based on questions included in prior studies of TBI in school aged children and based on input from interviews with two former teachers, a school nurse and a district administrator in Washington State. Additional input on survey questions was provided by Molly Fuentes, MD, who specializes in pediatric rehabilitation and TBI, Sharon Ashman, PhD, ABPP, a pediatric neuropsychologist and Brian Ross, Manager of the Seattle Children's Education Department. Test versions of the online surveys were completed in order check functionality and estimate time to complete.

Schools were contacted to request participation between February 27, 2015 and May 13, 2015. Survey links were sent to participating schools beginning on March 10, 2015, while schools that enrolled after that date received survey links within 1 business day of their enrollment. Two schools requested paper versions of the survey, one of which received and returned the surveys by mail while the other requested that we distribute and retrieve the surveys in person. Paper surveys contained no identifiable data and will be stored in a locked room at HIPRC up to one year in case of further data analysis. In June of 2016 they will be destroyed. All forms of data collection closed on June 15, 2015 to allow for data analysis and preparation of the final report.

At each participating school, surveys were distributed by an administrator to appropriate staff members (decided by type of enrollment). Surveys asked questions aimed at assessing each respondent's knowledge, opinions, and potential experience regarding students with TBI re-entering school following their injuries and any relevant policies at their corresponding schools or districts.

To further assess respondents' experiences and opportunities for improvement, we conducted a 1-hour focus group of parents of children with TBI on April 18, 2015 and several individual interviews with school nurses, teachers, and parents who were unable to participate in the focus group. The interviews were each about 30 minutes long and were scheduled between April 20, 2015 and May 27, 2015. These interviews covered similar topics as the surveys but encouraged respondents to provide greater detail about the events surrounding the students' care and the

coordination of that care among the school staff. All focus group participants and interviewees were compensated \$50 for their time.

Parents, teachers and nurses could choose to fill out an online survey as well as participate in a focus group or individual interview. Because survey responses were anonymous, we were unable to determine if all of the focus group and interview participants also completed a survey.

Analysis

As outlined in the initial proposal, Brain Injury Alliance of Washington State (BIAWA) data was analyzed to explore educational attainment of people with TBI the length of time needed to complete goals.

Interview and focus group data was not analyzed due to time constraints. Survey data were analyzed and are presented here.

Categorical and demographic survey data were analyzed quantitatively while open-ended survey questions were analyzed using a qualitative content analysis. Two coders independently reviewed the survey responses and identified thematic codes using a deductive approach. Those thematic codes were then discussed by coders and developed into a data-driven codebook. The codebook was applied to the open-ended survey responses by coders independently and then reviewed together to ensure reliability of coding. As new codes arose, they were added to the codebook through an iterative process and the previously coded surveys were reviewed with the new code in mind. Codes covered three major categories: specific given accommodations, types of accommodation processes and general feelings of responsibility and authority.

To answer the secondary aim, we conducted a more in-depth analysis of the responses from teachers who reported that they taught a student who experienced a TBI during the academic year in which they were in their classroom and that the student received no formal accommodations (n=12). This was done to isolate the effect of prior TBI knowledge on providing appropriate accommodations outside of any required accommodations in a 504 plan or an IEP that the teacher would need to follow regardless of whether they thought that the accommodations were necessary. We categorized the teachers' self-reported offered accommodations according to the symptoms they identified as being associated with TBI and analyzed the overlap of accommodations and knowledge to identify patterns. To assess potential differences in care by TBI severity, we used hospitalization as a surrogate for TBI severity and grouped parent responses by whether or not they were hospitalized.

P-values are not reported for the results of this assessment because, within each analysis, there were strata with less than 20 observations. As a result, the resulting p-value would not meet the assumptions of normality necessary to calculate accurate and meaningful p-values. With such small sample sizes, each observation carries enough weight that a single response may dramatically change the level of association (statistical significance). For this reason, p-values that might not be supported by a future study with a larger sample size are not included.

All of the online surveys were hosted with REDCap (anonymous paper versions of the survey were provided to two schools as requested) and analysis was completed with Stata (StataCorp, 2013) and Dedoose (Dedoose, n.d.).

Results

BIAWA

BIAWA data was abstracted from the BIAWA database and included all calls and clients with resource management from October 6, 2009 to when the data were abstracted on April 9, 2015. The Data are collected for anyone who calls in to the resource line at BIAWA or comes in for an in-person intake to receive resource management. After the client has received the services needed, they are discharged from resource management but may continue to use the resource line or may decide to complete another intake for more resource management support.

There were a total of 3,248 clients included in the dataset provided by BIAWA. Most of their patients were missing data in the data collection fields important to assessing the impact of TBI on educational attainment, especially: date of injury (55.4% missing), current age (61.2% missing) or age at time of injury (50.3% missing), type of brain injury (ABI vs TBI) (37.9% missing), former 504 or IEP (unknown missing, potentially as high as 99%), highest level of education completed (45.4% missing) and all but 547 (16.8%) were missing the general goal classification. This missingness hindered our ability to assess the varying educational needs of BIAWA clients with TBI.

Parents

Participation

30 parents completed the online survey. Among the participating parents, all of those children who were hospitalized (n=9) were admitted to the ICU for a mean of 8.5 days (ranging from 2-21 days) and eight required mechanical ventilation. Among children who were not hospitalized (n=21), only 11 visited the emergency department while the rest visited their primary care physician. After grouping together parents of hospitalized and non-hospitalized children we saw that all of the hospitalized children received rehabilitation therapy, with six receiving both inpatient rehabilitation prior to their discharge and outpatient services after their discharge. Among the non-hospitalized group, (42.9%) received therapy services following their TBI. (See Table 2.)

Baseline characteristics

When comparing the non-hospitalized group to the hospitalized groups, there was no statistical difference in insurance status at time of TBI, highest level of education attained by parent, race of the child or average household income. The majority (55.5%) of hospitalized children's TBI occurred between Kindergarten and 5th grade compared to the majority (57.1%) of non-hospitalized children injured during High School. (See Table 2.) 52.4% of non-hospitalized children belonged in the Advanced Placement or Honors track compared to only 11.1% of hospitalized children. The academic program pre and post TBI was identical among non-hospitalized children. Among hospitalized children, all had either a 504 or an IEP following

injury, two received both an IEP and a 504 plan indicating a significant change in their academic program. (See Table 3.)

Post TBI transition preparedness

The vast majority of parents felt unprepared to support their child during the transition back to school. Parents were asked to use a Likert scale to rate their feelings of preparedness with regard to supporting their children in their transition back to school (very prepared, sufficiently prepared, uncertain, not very well prepared and very unprepared). A higher proportion of parents of hospitalized children reported feeling not very well prepared and very unprepared (44.4% and 22.2% respectively) than the parents of non-hospitalized children. Within the non-hospitalized group, 14.3% reported feeling not very well prepared and 19.0% reported feeling very unprepared. 23.8% of parents of non-hospitalized children reported both being uncertain about their level of preparedness and being sufficiently prepared. (See Table 2.)

Opportunities to be involved in school care

Among both parents of hospitalized and non-hospitalized children, the majority of both groups reported that they were given opportunities to be involved in their child's care and development of their academic accommodations, with parents of hospitalized children more likely to report having opportunities to be involved (77% and 66%) and having felt listened to as they advocated for their child (57% and 55%) at school. (See Table 2.)

Additional school support services requested

When asked about what support services would have helped parents, many parents wanted more support from medical providers, school and from a caseworker or case manager. Parents of hospitalized children were more likely than parents of non-hospitalized children to indicate a desire for more support from the hospital (55.5% vs. 28.6%), more support from the school (77.7% vs. 57.1%) and more support from an agency like BIAWA (66.6% vs. 42.9%). Parents of non-hospitalized children were more likely than parents of hospitalized children to request more education on what academic services and support was available (76.2% vs. 44.4%) and other forms of additional follow up and referrals (28.6% vs. 0%). Approximately 30% of parents of both hospitalized and non-hospitalized children indicated the desire for a caseworker to provide support post-discharge (33.3% and 28.6%, respectively). Although that option was not listed on the survey, nine parents wrote in a request for a caseworker in the 'Other' option on the survey. Parents of hospitalized children were more likely to indicate their preferred forms of communication was online (77.7% vs 52.4%), while parents of non-hospitalized children were more likely to indicate a desire for information in pamphlet form (57.1% vs 22.2%) and only slightly more likely to request information in a conversation with a care provider prior to discharge (61.9% vs 55.5%). (See Table 2.)

Transition process

There was a difference in the types of transition services provided between the hospitalized and non-hospitalized TBI groups. Parents of hospitalized children with TBI were more likely to have a meeting attended by doctors and teachers/school staff than parents of non-hospitalized children

(33.3% vs 0.0%) and more likely to receive a follow up call post-discharge (55.5% vs 0.0%). A health care provider was also more likely to have reached out to the school directly prior to the child's re-entry for hospitalized children compared to non-hospitalized children (55.5% vs 9.5%) which is in line with the increased involvement of hospital staff in patient care for a hospitalized patient compared to a non-admitted patient. Parents of non-hospitalized children were more likely to report only written or verbal communication between doctors and teachers (52.4% vs 33.3%) as well as reporting no coordination between hospital and school (38.1% vs 33.3%). (See Table 2.) The transition team members were also different between hospitalized and non-hospitalized children. Half of both hospitalized and non-hospitalized groups had a teacher involved in their transition team. Non-hospitalized students were more likely to have a doctor involved in their transition team (38.1% vs. 11.1%) as well as a school nurse (57.1% vs 11.1%). Hospitalized children were more likely to have a psychologist/school counselor on their transition team (66.6% vs 14.3%) and support from an external organization like BIAWA (33.3% vs 0.0%) compared to non-hospitalized children. (See Table 5)

Academic accommodations

In general, the majority of students (63.3%) received some type of academic accommodation following TBI. As reported by parents, non-hospitalized children were more likely than hospitalized children to receive no special services (42.9% vs 22.2%), informal services (28.6% vs 22.2%) and 504 plans (28.6% vs 11.1%). Within this sample, 33% of hospitalized children received an IEP, in contrast to 0.0% of the non-hospitalized children. Parents of hospitalized children were more likely than non-hospitalized children to report concern regarding their child's academic performance following the TBI (55.5% vs 33.3%), changes in speech and language (44.4% vs. 4.8%), changes in their child's social and behavioral needs (33.3% vs 9.5%) and physical/motor symptoms (33.3% vs 0.0%). Parents of non-hospitalized children were more likely than parents of hospitalized children to report no lasting impact of the TBI on their child's general needs or functioning (61.9% vs 33.3%). (See Table 5.)

Communication levels

Parents reported that communication between schools and hospitals was difficult and often insufficient. One parent stated, "*The physicians and psychologists were only available via phone. I would have preferred an in-person meeting to establish necessary care and specific needs so school truly understood situation.*" Some parents also expressed frustration with the communication from the hospital: "*They could have communicated more closely with me, and communicated at all with the school directly. I've felt lost, with no sense that they're telling me how to handle this.*" (See Table 11 for exemplary quotations.) Parents of hospitalized children were more likely to report higher levels of communication, follow-up and accommodation than the parents of non-hospitalized children, but they were also more likely to report they were "very unsatisfied" with services provided by school (66.6% vs. 23.8%) and by the hospital (22.2% vs. 9.5%). (See Table 2.) The majority of parents of hospitalized children met with their transition team either monthly or less (33.3%) or 2-3 times per month (44.4%) with most expressing a desire to meet once a week (66.6%). Slightly less than half of the parents of non-hospitalized children indicated they never meet with a transition team (47.6%) and while 23.8% indicated they did not see a need to meet, 14.3% wanted to meet monthly or less, with 57.1% wanting to meet once a week ideally. (See Table 5.)

Barriers to receiving accommodations

The major barriers to receiving accommodations reported by parents were teachers not having enough time and school staff not having the knowledge to accommodate. In addition, one third of parents of the non-hospitalized children and nearly one quarter of parents of hospitalized children indicated their child's teacher "thought the child was faking it". One parent stated, "*They had no clue how to handle my son since he didn't have a 'visual' impairment, like a cast or crutches. They thought he should be back to normal in two weeks.*" Almost half of both groups indicated teachers not having enough time to provide additional services (47.6% and 55.5%) and school staff not knowing how to accommodate (47.6% and 55.5%) were major barriers to receiving appropriate support for their child. 23.8% of parents of non-hospitalized children indicated that there were no barriers to receiving services for their child, while no parent of a hospitalized child agreed. There were also a few parents that expressed a decrease in services in years following their re-entry to school. One such parent said, "*The school at first was amazing, it's now that we are 4 years into this I think they forget and her care is lessened.*" Even among students who received accommodations, some faced additional academic challenges stemming from their schools transition process. One parent described their child's transition process: "*My son was weeks behind in school and had to drop 3 of his 6 classes while waiting for the accommodation plan to be put in place.*" Another parent echoed their sentiment, "*The school refused to create an IEP at that time for my son because they said he needs to wait his turn on the IEP evaluation waitlist even though the hospital had given a full evaluation. School would not accept the hospitals evaluation.*" (See Table 11 for exemplary quotations. Other data not shown.)

Parent Recommendations

Half of parents (50%) surveyed wanted more collaboration between transition team members and more communication. Almost a quarter of parents (23.3%) requested more parent preparedness and provision of materials. (See Tables 10 and 12.)

Teachers

Participation

A total of 83 teachers responded to our survey. The most common school types among responding teachers was elementary school (32.5%), re-engagement schools (14.5%) and taught high school (13.3%). A notable proportion of teacher responses were educators of non-enrolled schools (15.6%) who were directed to the survey from the OSPI listserv. Because we did not ask teachers to identify their school within the survey, we are unable to report geographic locations for schools of teachers recruited through the OSPI listserv. (See Table 4.)

Experience with students with TBI

Of the 83 teacher respondents, approximately half (n=42) reported having had a child with TBI in their classroom at some point in their career. (See Table 4.) Of those 42 teachers, 30 (71.4%) reported having taught a student during the same academic year in which the student was injured.

Only those educators who had experience teaching a student with TBI were asked about the transition process at their respective schools. Responses from all of the teachers were otherwise analyzed together, including recommendations. Half (n=15) of the teachers with experience teaching a student who was injured during the same academic year reported working with other teachers to support the student's transition back to the classroom. Additionally, 70% of the teachers stated that they received support from the school nurse and 20% stated that they were supported by therapists and health care providers. Only 13.3% of the teachers who reported having taught a student injured in the same academic year stated that they (the teachers) received no support compared to 66.6% of teachers who taught students injured at least one year prior. (See Tables 5 and 7.)

Transition team

Half of teachers who had support transitioning a student back to school immediately following their TBI only met with their transition team once, yet 47.6% of the teachers said that their ideal meeting frequency with those involved with the students transition was once a week. (See Table 5.) Teachers reported that their communication with health care providers was more often coordinated by parents (28.6%) with only four teachers (9.5%) actually meeting with the child's doctors to discuss their new needs. (See Table 4.) 59.5% of teachers with a student with TBI spent additional time with the student, ranging from <1 hour per week (40.0%) to 1-2 additional hours per week (52.0%) and 8.3% spending 3-4 more hours per week with the student. (See Table 6.) According to teacher responses, almost half of the students did not receive any special accommodations to support their return to school, but 28.6% did receive a 504 and 26.2% were given IEPs. Only two students received both a 504 and an IEP. (See Table 5.)

Teacher knowledge of TBI

Majority of teachers had low knowledge of TBI and many had not received any formal training in TBI. Teachers were also asked a series of three questions aimed at assessing their knowledge of TBI symptoms and duration of recovery. The first question included identifying symptoms attributable to long-term effects of TBI by checking qualifying symptoms off a list. Correctly identifying 10 of 12 TBI symptoms was considered sufficient knowledge. The second question asked how emotional symptoms may present after TBI with a range of months and years to select from. The third question asked how long after TBI new mental/cognitive symptoms may develop and also provided a range of months and years. We then classified teachers as having low knowledge (≤ 1 question correct) (59.0%), intermediate knowledge (2 correct) (27.7%) or high knowledge (all 3 correct) (13.3%). (See Table 7.)

Of the 49 teachers classified as having low knowledge of TBI using the scoring method described above, 53.1% reporting having had a student with TBI in their classroom and 77.6% had not received any formal TBI training. Twenty-three teachers were classified as having intermediate knowledge of TBI, 52.2% of which reported having had a student with TBI and 52.2% had no formal TBI training. Of the 11 teachers classified as having high knowledge of TBI, 36.4% had a student with TBI compared to over half of the teachers with intermediate and low levels of TBI knowledge. Those within the high knowledge group also demonstrated a low likelihood of having had formal TBI training as 63.6% reported not having had any TBI-specific training. (See Table 7.) The types of formal TBI training received by teachers varied. For

example, one teacher received training from a 1-day session as part of a Masters of Teaching program while another was trained through videos and quizzes required as part of a training program to serve as a sports coach. Of the 25 teachers who reported having some training on TBI, four cited training received while working as an EMT and three cited lifeguard training. Although all of these forms of training would include signs and symptoms of TBI, it is unlikely that any other than the teaching program would have included information on academic accommodations following return to education among students with TBI. The other trainings likely focused on immediate assessment with little focus on the long-term effects and needs resulting from TBI. Lifeguard and EMT training on head injuries typically focuses only on stabilization, splint technique and backboard use. (Red Cross, 2012; Stoy et al., 2012)

Association between teacher knowledge and given accommodations

Among the 12 teachers who had a student who experienced TBI during the year they were in the classroom and whose students had no formal accommodation in place, all 12 teachers correctly identified at least 10 of the 12 listed TBI symptoms. Three of those teachers (25%) offered extra time for tests and two (16.7%) offered alternate forms of test-taking. Five (41.7%) teachers offered reduced-length assignment and 11 (91.7%) reduced or forgave some amount of work missed during the student's recovery. Although these four accommodations were commonly provided by the 12 teachers, all but one neglected to provide an option for napping, concept repetition and having another student help take notes for the student with TBI, all of which are suggested best practices. Additionally, several other "best practice" accommodations reported as offered by other teachers in the study that were not offered by any of these 12 teachers. (Data not shown.)

Teacher responses did not indicate that materials on best practices were available to guide curriculum adjustment. Of those 29 teachers surveyed who reported having had a child with TBI in their classroom, 70.8% of them had no materials on TBI and only 4.2% were given their school's policy on providing accommodations for students with TBI. Additionally, while planning accommodations, only 16.7% of these teachers used guidelines developed by such institutions as the CDC or the NIH for returning a child to school following a TBI. (Data not shown.)

Teacher requested support for TBI

The most common recommendations teachers had to improve the transition of students back after a TBI were to provide more TBI-specific training opportunities to teachers (66.3%), to allow teachers additional time to provide adequate assistance to students with TBI, including by providing support to teachers (22.9%), and to provide written recommendations/ best practices to follow in the course of providing accommodations to students (31.3%). Teachers also recommended increasing communication with transition team members, especially with doctors and parents (32.5%). Other recommendations included implementing a policy to guide the student's return to school (9.6%), supporting fast and flexible accommodations for students with TBI (7.2%) and providing support for environmental accommodations made in the classroom (6.0%). (See Table 10.) One teacher even requested a support team model, saying, "*Wouldn't it be cool if the educational system had a consultant available? Even if she/he were stationed*

elsewhere and we utilized Skype or conference calls with the consultant, the student, teachers and case managers or counselors.” (See Table 11 for exemplary quotations.)

Administrators

Fourteen administrators responded to the survey. Each of the six school types were represented by at least one responding administrator. (See Table 1.) Administrator questions were aimed at assessing the type of accommodation process and range of given accommodations and at understanding the level of awareness and responsibility each administrator felt during their students’ transitions. One administrator reported feeling responsible for the student’s transition after TBI saying *“If this occurs in our school, I work directly with the student, parents, and teacher to ensure the student is getting the support needed and as recommended by the district policy and physician.”* (See Table 11 for exemplary quotations.) 21% indicated that they were unaware of the accommodation process for students with TBI at their schools and only 35.7% correctly described the unique needs of a child with TBI.

The most common administrator recommendation for improving services for a child with TBI was to have more training opportunities for teachers and other school staff (50.0%). Other common recommendations were to have a policy to direct students’ return to academics (35.7%), a guide to recommended accommodations and best practices (14.3%) and improved communication between transition team members (21.4%). Additionally, one administrator identified the lack of funding to offer support through tutors and teachers’ aides as a major barrier to providing appropriate services to students. Another two administrators indicated the inflexibility of AP and IB courses a major barrier, to which schools cannot alter the tests or assessments. (See Tables 10 and 11.)

School Nurses

Of our 57 total nurse respondents, 46 (80.7%) were respondents from the OSPI listserv email. Seventeen of these 46 nurses were district level nurses who oversee the nursing services in all schools within the district, including the vocational schools, either directly by splitting their time amongst the different schools or indirectly through an administrative role. (See Figure 2.) District nurses have a broad and deep knowledge of services and are typically involved in the development and adoption of new policies and practice. As with the administrator surveys, nurse surveys were aimed at assessing the type of accommodation process and given accommodations. (See Attached Nurse survey below.)

The main recommendations from school nurses were similar to the recommendations from teachers, parents and administrators. The nurses requested more training, especially for educational staff without a medical background (28.1%), a policy that would guide a student’s return to academics following a TBI (31.6%) and a guide they could provide to teachers outlining best practices and recommended accommodations (15.8%). Nurses also indicated a need for more collaboration with transition team members (26.3%). (See Table 10.)

Types of Accommodation Processes

Based on an iterative coding of the nurse and administrator responses to questions on policy regarding a return to learn for students with a recent TBI, we categorized school process types into three main categories: no process, ad hoc/informal process and formal guidelines. About 23% of schools and 23.5% of the 17 districts had no policy in place and did not indicate any knowledge of potential accommodations. 66.6% of participating schools and 58.8% of districts had no policy in place but did describe an informal process to support students transitioning back to school following a TBI. 10.4% of participating schools and 17.6% of participating districts had formalized guidelines and/or policies to guide a student's transition back to the classroom following a TBI. (See Table 8.)

A school was categorized as having an ad hoc/informal process if it demonstrated having an informal accommodation process that was completely variable for each student with TBI, dependent on who at the school was responsible for the student and the perception of each injured student's individual needs. This included any school with a general process followed by an individual nurse or administrator that was not formalized and would not be maintained with staff turnover. Although informal processes may allow for appropriate services provided to children with TBI, they also have the potential for students and parents who do not communicate their needs clearly to fall through the cracks and not receive the accommodations they need.

Schools categorized as having guidelines were those that had highly specific policies that allowed for all students with TBI to be evaluated and have the option for a gradual return to academics. Schools with guidelines on return to play in sports following a TBI or concussion but without policy guiding return to academics were not included in this category because return to play policies are mandatory for all WA State Schools. One nurse from a school with formal guidelines described their policy:

1. *The school is notified that a student has sustained a concussion*
2. *The parents provide the school with directions from the healthcare provider, if they are available*
3. *The health clerk notifies the school nurse*
4. *The teachers are notified that the student has sustained a concussion and that an individualized healthcare plan will be coming from the school nurse*
5. *The school nurse contacts the parent and student*
6. *The school nurse writes the individualized healthcare plan and provides staff training as needed*
7. *The school nurse notifies the 504 Coordinator if academic accommodations are needed*
8. *A 504 Plan is written by the 504 team*
9. *The school nurse monitors the student's recovery from the concussion*

There was some variation between the most commonly employed accommodation processes when comparing different types of schools. No vocational or elementary schools had formal guidelines, whereas three of our 14 participating High Schools (21.4%) had formal guidelines regarding return to academics following injury. Of the 17 district nurses who described the district level policies, 70.6% employed ad hoc processes while 23.5% did not follow any process.

Only 14% of middle schools had formal guidelines, with the majority had an ad hoc process (64.3%). (See Table 8.)

Five of the 33 schools that agreed to full participation (15.2%) had both an administrator and a school nurse fill out surveys. At those five schools, only two schools had complete agreement between nurses and administrators on the type of transition process the school employed (one informal process school and one school with no guidelines). One school administrator described an informal process while the nurse of the same school stated that there was no process. Two of the other three schools' administrators said they had informal processes while their respective school nurses were able to give a detailed description of their policies, each of which we classified as formal guidelines. (Data not shown.) This illustrated a varying level of agreement or awareness of the process of accommodation by staff members at the same school. To preserve anonymity and allow teachers to be candid, we did not ask teachers to list the school at which they taught. Therefore, we were not able to compare teachers' perspectives on the transition process to the type of process described by their corresponding school's nurse or administrator.

The schools reporting formal guidelines were more likely to provide a student with a TBI a 504 plan compared to schools with informal guidelines and schools with no guidelines (37.5%, 28.6% and 13.3%, respectively). The schools with formal guidelines were more likely to provide IHPs (25.0%, 19.0%, 0.0%, respectively) and much more likely to base their accommodations on the recommendations of the student's physician (50.0%, 54.8% and 26.7%, respectively) and to require written clearance from a healthcare provider before the child returns to full academics (37.5%, 21.4%, 6.7%, respectively). Many of the schools classified as having no process indicated that a major barrier to providing services was lack of communication (40.0%) in contrast to schools with guidelines (12.5%). Schools with formal guidelines were also more likely to limit a student's allowed screen time (12.5%, 11.9% and 0.0%, respectively) and to have a meeting with parents and/or health care providers (50.0%, 23.8%, 0.0%, respectively). There were no differences between schools with formal guidelines and informal guidelines with respect to providing IEPs, offering rest, implementing a gradual return to academics, limiting physical activity and PE or use of special education to support the transition. For all of those preceding accommodations, however, the schools with no guidelines offered those accommodations much less frequently than schools with either formal or informal guidelines. There was also no major differences between the types of accommodation processes with respect to how often nurses indicated the teachers' unwillingness to use best practice accommodations. (See Table 9.) One nurse commented, "*Some teachers are willing to accommodate after the initial injury, but then resist continuing accommodations if the recovery is prolonged.*" Although we cannot measure the actual benefit children received as a result of having a guidelines in place at the school, parents expressed dissatisfaction when they experienced a transition process without guidelines: "*There was no transition team helping us return to school. We suffered a year before school even acknowledged there was problem. Then was treated like a hot potato/lawsuit waiting to happen.*" (See Table 11 for exemplary quotations.)

Discussion

We found schools with formal guidelines were most likely to provide accommodations that are in line with best practices. Schools with older grades were more likely to have formal guidelines than schools with younger grades only. There was agreement between teachers, administrators, parents and school nurses on the following areas: providing more training to educators, having a policy to guide the return to school, providing best practices and increasing communication between stakeholders.

The difference in academic program between hospitalized and non-hospitalized students may be explained by the difference in grades at the time of injury. Since hospitalized children in our study were injured at younger ages than non-hospitalized children, they may not have had the same opportunities for Advanced Placement and Honors courses as the non-hospitalized children.

When formal accommodations are not provided to students, and teachers can choose the level of accommodation provided, then teachers are providing lower levels of accommodation compared to students with formal accommodations. Although this may reflect a real difference in needed accommodation between students that receive formal accommodations and those that do not, it could also indicate a low level of accommodation provided to students without formal accommodations that would benefit from additional support in the healing process.

Possible Continuing Education Credits Option

Teachers in Washington State are required to maintain competency by completing 150 continuing education clock hours per five years. These credits may be earned either through a continuing education credits taken as graded courses from Universities, or as continuing education hours earned through smaller training modules that can count towards continuing education credits. Having a training module available to teachers who are interested in learning more about TBI and appropriate accommodations for students with TBI would help fill the gap in preparedness identified by teachers, administrators, school nurses and parents.

Main Findings

- Parents typically serve as the coordinator for communication between teachers and health care providers.
- Teachers and parents both want to meet more frequently and have more communication with their transition team than they are currently.
- Students with TBI are not assigned to teachers with TBI knowledge and training. This may reflect a lack of resources or lack of awareness.
- About two-thirds of teachers have had no formal training on TBI. Among those who did receive training on TBI, many did not receive training that went beyond first aid stabilization of a head injury.
- Most of teachers who had a student with TBI did not have access to materials on TBI while supporting the student in their initial transition or while providing longer-term support.
- Teachers were mostly unaware of the needs of children with TBI and unaware of the accommodation process for students with TBI.
- Schools with formal guidelines in place to inform a student's transition back to school following TBI were more likely to provide accommodations in line with best practices.

- Most schools had informal guidelines to inform a student's return to school. There was an observed difference in the type of accommodation process and school type with high schools more likely to have formal guidelines in place compared to schools with lower grades.
- Children with a mild-to-moderate TBI experience more barriers to receiving accommodations and support from school staff compared to children with more severe forms of TBI.
- Surveyed parents, teachers, school nurses and administrators agreed on the following recommendations for improving a student's transition back to school following TBI: provide best practices and recommendations, provide a sample policy for easy adoption, improve communication between transition group members and provide an opportunity for continuing education credits for teachers on TBI.

Study Limitations

Our results are limited by our small sample sizes, which may have illustrated trends that would have not been present with a larger sample. Also, because we recruited for participation on such a short timeframe, there may have been selection bias by schools who had time to donate during such a busy point in the academic year as participation was voluntary.

Response bias will be seen amongst all respondents. Parents with more positive experiences would have been less likely to respond, teachers would also be more likely to respond if they had an outside interest in traumatic brain injury due or having a recent experience with a student with TBI that motivated their response. Yet, our study, although small and with a huge potential for response bias, it was comparable to the Oregon state study Glang conducted. In her study, a total of 31 parents participated in the survey, with a smaller sample of those participating parents invited to a focus group as well. 183 educators responded to the initial teacher survey with an additional 34 surveyed again at the end of the year after attending a regional workshop on TBI. Their study focused on assessing parent attitudes and teacher knowledge. Although they did have more teacher respondents than we had in our study, theirs did not include administrators or school nurses - both important parties involved in the academic planning and care of a student with TBI.

In our sample the majority of participants were white, especially participating teachers. This, however, may be representative of the ethnic diversity among teachers in Washington State, 92.7% of which were reported as white in the 2003-2004 academic year. (NSES)

Parents of hospitalized children were least likely to report being satisfied with the services provided by the school and hospital, and were also less likely to report feeling prepared even though they received more accommodations than non-hospitalized children. Although the hospitalized children had more severe forms of TBI, and required more accommodations, the accommodations did not seem to be adequate to the parents. Potentially indicating a need for even more administrative support for more severe injuries.

It is also not possible to tell if the different levels of accommodation received between hospitalized and non-hospitalized children reflected a lack of support from the school and hospital or of differing levels of need between the two groups. It is also likely that there was some combination of both.

We will be presenting our findings at the bi-annual School Nurses Association of Washington (SNOW) conference in October and are pursuing opportunities to present to the Washington State School Directors Association and to the Washington Student Achievement Council Disabilities Task Force.

Ongoing Efforts, Next Steps and Future Opportunities

As a part of the HIPRC summer student program, we have continued working with BIAWA on two project aims. 1) Identifying opportunities to improving data collection to facilitate future research using BIAWA data. 2) Analyzing goal achievement for TBI survivors, regardless of their educational attainment and age at time of injury.

OSPI currently publishes and revises the Washington State School Staff Health Training Guide for School Nurses (OSPI 2015) annually which includes state policy and resources available for health issues students may have including TBI, diabetes, epilepsy and more. The 2015 revision includes a model policy developed by the Washington State School Directors Association (WSSDA) for easy school district adoption. It also includes the current WA State policies pertaining to concussion and head injury. (See Appendix 1) However, the WSSDA policy only pertains to school sports-related concussions (See Appendix 2) and the training guide does not include resources for curriculum modification. OSPI has offered to host revised best-practices and sample policies if developed.

The immediate next step is to develop materials that would meet the needs identified in this pilot study by all our groups - parents, administrators, teachers and school nurses. HIPRC is also in a strategic position to create a training module that could count for teachers' credit hours. Not only does Harborview offer video creation and editing for its departments, but we also house many of the field's leading experts in traumatic brain injury research in our center and could include them and their expertise in the training video.

Future funding would be required to allow us to:

- Analyze the focus group and interview data collected to identify nuances in the provision of academic accommodation.
- Develop an online training module for educators that would count towards continuing education clock hours.
- Draft an updated policy that could be easily adopted by school districts and would include return-to-learn best practices.
- Create a best practices guidebook that would offer recommended accommodations and sample curriculum adjustment.

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Tables

Table 1: Survey responses by school type from a total of 48 participating schools and 17 school districts in Washington State

School Type	Administrator (n=11) N (%)	Teacher (n=83) N (%)	School Nurse (n=57) N (%)
High School	2 (14.3)	11 (13.3)	4 (7.0)
Middle School	1 (7.1)	7 (8.4)	2 (3.5)
Elementary School	2 (14.3)	27 (32.5)	2 (3.5)
Tribal School	1 (7.1)	4 (4.8)	1 (1.8)
Reengagement Schools	2 (14.3)	12 (14.5)	2 (3.5)
Vocational School	3 (2.14)	9 (10.8)	0 (0)
OSPI Listserv	0 (0)	13 (15.7)	46 (80.7)

Table 2: Parent demographics and transition processes comparing parents of hospitalized and non-hospitalized children.

Characteristics	Not Hospitalized (n=21) N (%)	Hospitalized (n=9) N (%)
Highest level of parental education attained by either parent		
High School	0 (0)	2 (22.2)
Some College	2 (9.5)	1 (11.1)
Associates Degree	1 (4.8)	1 (11.1)
Bachelors Degree	6 (28.6)	0 (0)
Graduate or Professional School	12 (57.1)	5 (55.5)
Insurance at time of Injury		
Private Insurance	18 (85.7)	6 (66.6)
Public Insurance	3 (14.3)	2 (22.2)
No Insurance	0 (0)	1 (11.1)
Race of the child		
White	15 (71.4)	6 (66.6)
Asian	1 (4.8)	0 (0)

Two or More Races	4 (19.0)	2 (22.2)
Decline to answer	1 (4.8)	1 (11.1)
Average household income		
Below the FPL	2 (9.5)	2 (22.2)
FPL-2xFPL	2 (9.5)	1 (11.1)
2xFPL or More	17 (81.0)	6 (66.6)
Grade of child at time of injury (years)		
Prior to starting school	1 (4.8)	1 (11.1)
K-5th grade	7 (33.3)	5 (55.5)
6th -8th grade	1 (4.8)	1 (11.1)
9th -12th grade	12 (57.1)	2 (22.2)
Parent self-rated preparedness		
Very unprepared	4 (19.0)	2 (22.2)
Not very well prepared	3 (14.3)	4 (44.4)
Uncertain	5 (23.8)	2 (22.2)
Sufficiently prepared	5 (23.8)	1 (11.1)
Very prepared	3 (14.3)	0 (0)
Given opportunities to be involved in care	14 (66.6)	7 (77.7)
Listened to during the transition process	12 (57.1)	5 (55.5)
Materials that would have helped		
More education on what services available	16 (76.2)	4 (44.4)
More direct support from the hospital	6 (28.6)	5 (55.5)
More direct support from the school	12 (57.1)	7 (77.7)
Support from an agency like BIAWA	9 (42.9)	6 (66.6)
Other	6 (28.6)	0 (0)
Form of materials		
In a pamphlet	12 (57.1)	2 (22.2)
In a conversation with an MD or Nurse prior to discharge	13 (61.9)	5 (55.5)
Online	11 (52.4)	7 (77.7)
Case worker to provide support post-discharge	6 (28.6)	3 (33.3)
Transition services provided		
Written or verbal communication between doctors and teachers/school staff	11 (52.4)	3 (33.3)
Meeting attended by doctors and teachers/school staff	0 (0)	3 (33.3)
Hospital reached out to the school directly prior to your	2 (9.5)	5 (55.5)

child's re-entry		
No coordination between hospital and school	8 (38.1)	3 (33.3)
Follow-up phone call	0 (0)	5 (55.5)
Other	3 (14.3)	0 (0)
Academic accommodations provided to support initial transition		
No special services	9 (42.9)	2 (22.2)
Informal Services	6 (28.6)	2 (22.2)
504	6 (28.6)	1 (11.1)
IEP	0 (0)	3 (33.3)
Other	0 (0)	1 (11.1)
Areas impacted		
Academic performance	7 (33.3)	5 (55.5)
Speech/Language	1 (4.8)	4 (44.4)
Social/Behavioral	2 (9.5)	3 (33.3)
Vision	0 (0)	0 (0)
Hearing	0 (0)	0 (0)
Physical/Motor	0 (0)	3 (33.3)
Medical symptoms	3 (14.3)	1 (11.1)
No lasting impact	13 (61.9)	3 (33.3)
Satisfaction with services provided by school		
Very unsatisfied	5 (23.8)	6 (66.6)
Not satisfied	3 (14.3)	0 (0)
Uncertain	4 (19.0)	1 (11.1)
Satisfied	4 (19.0)	1 (11.1)
Very satisfied	5 (23.8)	1 (11.1)
Satisfaction with services provided by hospital		
Very unsatisfied	2 (9.5)	2 (22.2)
Not satisfied	2 (9.5)	0 (0)
Uncertain	4 (19.0)	3 (33.3)
Satisfied	10 (47.6)	3 (33.3)
Very satisfied	3 (14.3)	1 (11.1)

Table 3: Academic accommodations pre and post-injury in hospitalized and non-hospitalized children

Academic program among non-hospitalized children (n=21)	Pre-TBI N (%)	Post-TBI N (%)
AP/Honors	11 (52.4)	11 (52.4)
General Education	6 (28.6)	6 (28.6)
504	3 (14.3)	3 (14.3)
IEP	1 (4.8)	1 (4.8)
Other	0 (0)	0 (0)
Academic program among hospitalized children (n=9)	Pre-TBI N (%)	Post-TBI N (%)
AP/Honors	1 (11.1)	0 (0)
General Education	5 (55.5)	0 (0)
504	1 (11.1)	4 (44.4)
IEP	1 (11.1)	7 (77.8)
Other	2 (22.2)	0 (0)

Table 4: Teacher demographics comparing teachers with and without prior experience with a TBI student.

Teacher Characteristics	Had a student with TBI (n=42) N (%)	No known student with TBI (n=41) N (%)
School Type		
Elementary School	8 (19.0)	19 (45.2)
Middle School	4 (9.5)	3 (7.3)
High School	9 (21.4)	2 (4.9)
Vocational	2 (4.8)	7 (17.1)
Reengagement	7 (16.7)	5 (12.2)
Tribal	1 (2.4)	3 (7.3)
OSPI	11 (26.2)	2 (4.9)
Teacher's Highest Level of Education		
Bachelors	12 (28.5)	16 (39.0)
Masters	29 (69.0)	25 (61.0)
PhD	1 (2.4)	0 (0)
Years Teaching		

Less than 5	7 (16.7)	13 (31.7)
5 to 10	6 (14.3)	5 (12.2)
10 to 20	8 (19.0)	9 (22.0)
20 or more	21 (50.0)	14 (34.2)
Average Class Size		
Less than 10	7 (16.7)	3 (7.3)
10 to 20	5 (11.9)	16 (39.0)
20 or more	30 (71.4)	22 (53.7)
Grades Taught1		
Other	2 (4.8)	6 (14.6)
6th grade	11 (26.2)	16 (39.0)
7th grade	16 (38.1)	17 (41.5)
8th grade	17 (40.5)	18 (43.9)
9th grade	26 (61.9)	12 (29.3)
10th grade	24 (57.1)	12 (29.3)
11th grade	30 (71.4)	15 (36.6)
12th grade	27 (64.3)	14 (34.2)
Subjects Taught2		
English	16 (38.1)	15 (36.6)
Math	12 (28.6)	10 (24.4)
Science	13 (31.0)	17 (41.5)
Foreign Language	1 (2.4)	2 (4.9)
History	13 (31.0)	12 (29.3)
Physical Education	4 (9.5)	1 (2.4)
Special Education	6 (14.3)	5 (12.2)
Electives	16 (38.1)	18 (43.9)
Gender		
Male	15 (35.7)	11 (26.8)
Female	27 (64.3)	29 (70.7)
Other	0 (0)	1 (2.4)
Race		
White	40 (95.2)	36 (87.8)
American Indian	0 (0)	1 (2.4)
Multiple Races	2 (4.8)	1 (2.4)

Prefer not to declare	0 (0)	3 (7.3)
Had formal TBI training	15 (35.7)	10 (24.4)
Communication with Health Care Provider		
Written or verbal communication between doctors and teachers/school staff	6 (14.3)	-
Meeting attended by doctors and teachers/school staff	4 (9.5)	-
Hospital reached out to the school directly prior to your child's re-entry	0 (0)	-
No coordination between hospital and school	10 (23.8)	-
Follow up Phone Call	0 (0)	-
No meetings with parent or provider	10 (23.8)	-
Parents were go-between	12 (28.6)	-

1: Most teachers taught more than one grade so may add up to over 100%

2: Most teachers taught more than one subject so may add up to over 100%

Table 5: Transition team characteristics as described by teachers and parents

Transition Team Characteristics	Teachers (n=29) N (%)	Parents of Hospitalized Children (n=9) N (%)	Parents of Non-Hospitalized Children (n=21) N (%)
Transition team members			
Teachers	15 (50.0)	5 (55.5)	12 (57.1)
MD	6 (20.0)	1 (11.1)	8 (38.1)
Nurse	21 (70.0)	1 (11.1)	12 (57.1)
Therapist	6 (20.0)	4 (44.4)	6 (28.6)
Psychologist/School Counselor	3 (10.0)	6 (66.6)	3 (14.3)
Special Education Teacher	2 (6.7)	0 (0)	0 (0)
School Administration	1 (3.3)	1 (11.1)	0 (0)
Parent	5 (16.7)	-	-
Athletic Trainer	1 (3.3)	0 (0)	0 (0)
External Organization	0 (0)	3 (33.3)	0 (0)
Other	0 (0)	0 (0)	7 (33.3)
No One	4 (13.3)	0 (0)	0 (0)
Transition team meeting frequency¹			

Never	4 (10.0)	1 (11.1)	10 (47.6)
Only once	15 (50.0)	0 (0)	0 (0)
Monthly or less	0 (0)	3 (33.3)	1 (4.8)
2-3 times per month	3 (10.0)	4 (44.4)	1 (4.8)
Once a week	7 (23.3)	0 (0)	5 (23.8)
Twice or more per week	0 (0)	1 (11.1)	4 (19.0)
Ideal transition team meeting frequency			
Never	2 (4.8)	0 (0)	5 (23.8)
Monthly or less	10 (23.8)	1 (11.1)	3 (14.3)
2-3 times per month	9 (21.4)	0 (0)	1 (4.8)
Once a week	20 (47.6)	6 (66.6)	7 (33.3)
Twice or more per week	1 (2.4)	2 (22.2)	5 (23.8)
Academic program post injury			
AP/Honors	0 (0)	0 (0)	11 (52.4)
General Education	19 (45.2)	0 (0)	7 (33.3)
504	12 (28.6)	4 (44.4)	3 (14.3)
IEP	11 (26.2)	7 (77.8)	1 (4.8)

Table 6: Teacher reported additional instructional time

	Teachers with a TBI student (n=41) N (%)
Spent additional time with student	25 (59.5)
Did not spend additional time, but student needed additional support	2 (4.8)
Did not spend additional time, but additional support not needed	12 (28.6)
Did not send additional time, other staff support provided	2 (4.8)
Number of additional hours per week spent by teachers spending additional time with students	
Less than 1 hour	10 (40.0)
1-2 hours	13 (52.0)
3-4 hours	1 (8.3)

Table 7: Teacher experiences with a TBI student by teacher knowledge level

Teacher TBI experience	Teacher TBI Knowledge		
	Low knowledge ¹ N (%)	Intermediate knowledge ² N (%)	High knowledge ³ N (%)
Number of teachers	49 (100.0)	23 (100.0)	11 (100.0)
Had a student with TBI	26 (53.1)	12 (52.2)	4 (36.4%)
Had formal TBI training	11 (22.4)	11 (47.8)	4 (36.4%)
Of teachers who had a student with TBI:			
Student's TBI occurred prior to entering that teachers class	4 (15.4)	6 (50.0)	0
Of teachers who had a student experience their TBI while in their classroom:			
Involved in transition team	12 (54.5)	5 (83.3%)	2 (50.0%)
Involved in designing accommodations	11 (50.0)	4 (66.7%)	2 (50.0%)

1: Low knowledge was classified as getting one or no knowledge questions correct

2: Intermediate knowledge was classified as getting two knowledge questions correct

3: High knowledge was classified as getting all three knowledge questions correct

Table 8: Distribution of accommodation process type by school type

School Type	No process (n=15) N (%)	Informal Process (n=42) N (%)	Formal Process (n=8) N (%)	Total Schools by school type
	Elementary School	2 (18.2)	9 (81.8)	
Middle School	3 (21.4)	10 (71.4)	1 (7.1)	14
High School ¹	2 (13.3)	9 (60.0)	4 (26.7)	15
Vocational	2 (66.7)	1 (33.3)	0 (0)	3
Reengagement	2 (40.0)	3 (60.0)	0 (0)	5
District Level	4 (23.5)	10 (58.8)	3 (17.6)	17

1: Single tribal high school grouped with other high schools

Table 9: Given accommodations by accommodation process type

	No Policy (n=15)	Informal Process (n=42)	Guidelines (n=7)
Given accommodations and challenges	N (%)	N (%)	N (%)
504 provided	2 (13.3)	12 (28.6)	3 (37.5)
IEP provided	0 (0)	5 (11.9)	1 (12.5)
Individual health plan provided	0 (0)	8 (19.0)	2 (25.0)
Place and opportunity to rest	1 (6.7)	10 (23.8)	3 (37.5)
Parent initiated the process	0 (0)	4 (9.5)	2 (25.0)
Reduced length of assignments	1 (6.7)	3 (7.1)	2 (25.0)
Teachers don't want to provide accommodations	1 (6.7)	5 (11.9)	2 (25.0)
Written clearance required from MD prior to full return	1 (6.7)	9 (21.4)	3 (37.5)
Additional time given on assignments and tests	0 (0)	3 (7.1)	2 (25.0)
Gradual return to school	0 (0)	18 (42.9)	4 (50.0)
Limit physical activity	1 (6.7)	19 (45.2)	2 (25.0)
No Physical Education	0 (0)	3 (7.1)	1 (12.5)
Limited screen time	0 (0)	5 (11.9)	1 (12.5)
Alternative schedule provided	0 (0)	2 (4.8)	1 (12.5)
Shorter class time	1 (6.7)	4 (9.5)	0 (0)
Special education	0 (0)	3 (7.1)	0 (0)
Transition team meeting	0 (0)	10 (23.8)	4 (50.0)
Accommodation based on MD recommendations	4 (26.7)	23 (54.8)	4 (50.0)
Extra staff provided to support student	0 (0)	1 (2.4)	0 (0)
Less light exposure	0 (0)	3 (7.1)	0 (0)
Decrease homework	0 (0)	3 (7.1)	1 (12.5)
Communication gaps present	6 (40.0)	6 (14.3)	1 (12.5)

Table 10: Shared recommendations between survey groups

Recommendations¹	Parents (n=30) N (%)	Teachers (n=83) N (%)	Nurses (n=57) N (%)	Administrators (n=11) N (%)
More training	10 (33.3)	55 (66.3)	16 (28.1)	7 (50.0)
Have a policy for return to learn	4 (13.3)	8 (9.6)	18 (31.6)	5 (35.7)
More communication between transition team members	15 (50.0)	27 (32.5)	15 (26.3)	3 (21.4)
Have best practices available	3 (10.0)	26 (31.3)	9 (15.8)	2 (14.3)
Provide more staff time for one-on-one	-	19 (22.9)	-	1 (7.1)
Must have fast and flexible accommodations	5 (16.7)	6 (7.2)	-	-

1: Other non-shared recommendations are in Table 12

Table 11: Selected quotations from each survey group for each of the four shared recommendations

Recommendations	Parents	Teachers	Nurses	Administrators
Provide teachers with more trainings on TBI	<i>"Have teachers, staff familiar/ trained with challenges of TBI."</i>	<i>"Teachers don't just need information, we need training. Someone needs to come in and coordinate the education of the teachers with what to expect, how to plan for & implement a classroom environment appropriate for a TBI student, as well as provide informational resources for future problems/concerns/situations that may arise."</i>	<i>"Workshops for all staff educating them with importance of accommodations."</i>	<i>"Have training for all teachers so that they all know the procedures and would have universal knowledge of the policy."</i>
Need a policy to guide a student's return to learn post TBI	<i>"Schools need a guide for when a student returns to school."</i>	<i>"It would be nice to have a protocol for return to full classwork. I know in sports we have a gradual plan for returning kids back to practice then competition but there is no such plan for school."</i>	<i>"To have consistent expectations/programs between schools and a further defined policy at district level would make services more reliable."</i>	<i>"Uniform policy about how to service students with TBI."</i>

Increasing communication and collaboration between transition team members

"The school should have coordination and communication between school nurse, attendance office, counseling office and teachers."

"I think teachers should request permission to speak with the doctor in order to be more attuned to expectations/possibilities and ideas for work-around where challenges exist."

"Better communication between all involved (parent/student, HCP, school nurse, coach, counselor, teacher) so that we can support the student through recovery and that academic/activity limitations continually reflect where the student's at."

"I would appreciate clearer direction from physicians regarding student limitations. Communication is the key to developing the right procedures and support."

There should be best practice recommendations and materials available

"Give me documents and/or literature on accommodations like the 504 and I.E.P."

"Education/awareness of helpful exercises and practices. For instance, if a person does "Brain dance" basics, does it "limber" up their mind and allow it to be utilized more effectively? Do "Brain Gym" exercises help re-wire processing pathways? Are there specific patterns or methods of presenting materials that help after TBI? etc."

"We have good information on setting up health plans and accommodations, but no guidelines regarding how often students should be re-assessed and/or cleared by the physician...perhaps a standard evaluation/tool/score sheet to monitor and document progress when a student returns to school."

"We need access to doctors and current research on how to best meet the needs of students with TBI."

Table 12: Non-shared recommendations and challenges by survey group

	Teacher (n=83)	Parent (n=30)
	N (%)	N (%)
Parents need more preparation before the student returns to school	-	7 (23.3)
Parents needs to be a strong advocate	-	7 (23.3)
Schools should listen to parents when designing accommodations'	-	5 (16.7)
Environmental accommodations would be beneficial (darker classroom, etc.)	5 (6.0)	-
Language barriers made communication with families difficult	1 (1.2)	-

Figures

Figure 1: Sampling Flow Chart

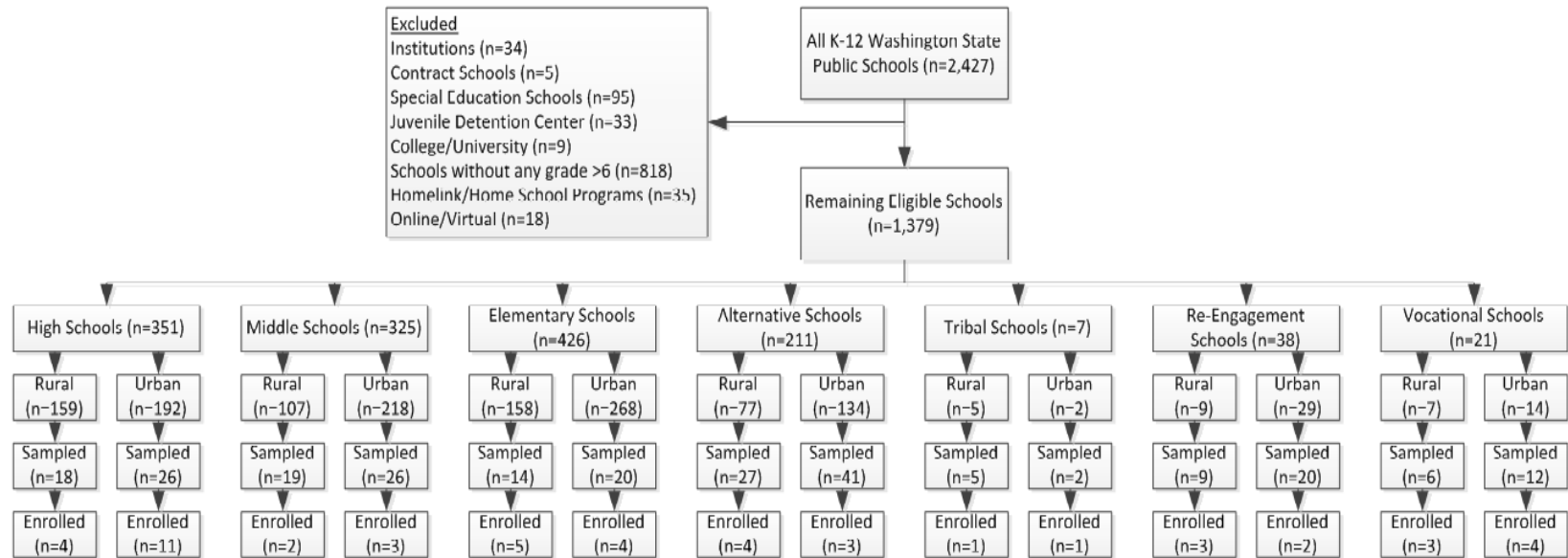


Figure 2: Recruitment Flow Chart

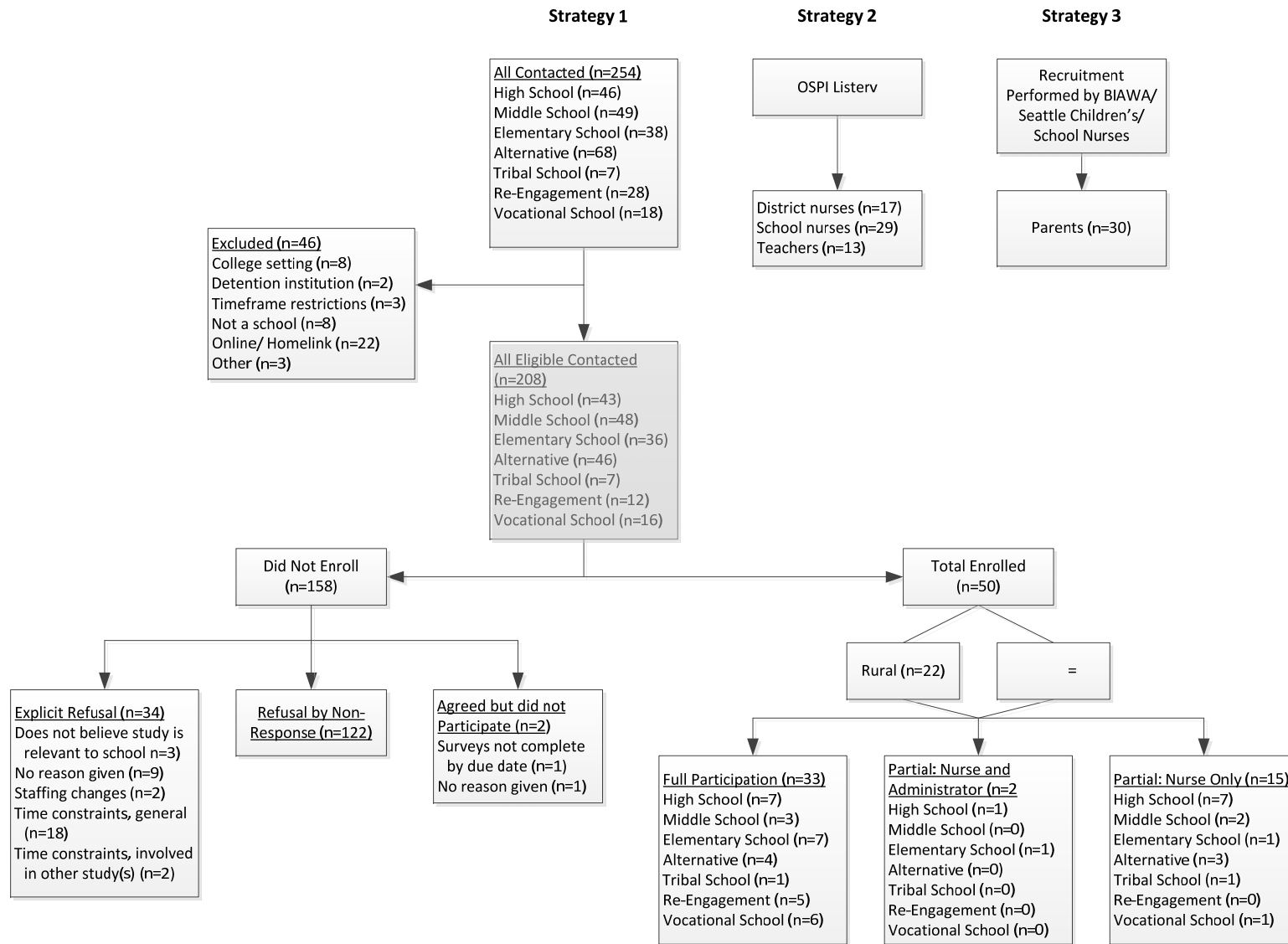


Figure 3: Map of geographic distribution of study participation.

The 17 WA State counties with at least one participating school or school district are highlighted in blue.



Appendix 1: WA State School Staff Health Training Guide

From the OSPI “Washington State School Staff Health Training Guide” (OSPI, 2015)

Washington State School Staff Health Training Guide

Training Topic	Required Per Law	RCW's, WAC, Laws, Rules & Guides
CLEAN INTERMITTENT CATHETERIZATION (CIC)		
<p>The RN, designated by the school board, shall be responsible for the training of the non-licensed school employees who are assigned to perform clean intermittent catheterization of the students. (WAC 246-840-820)</p> <p>Any public school district or private school that provides clean, intermittent bladder catheterization shall document the provision of training given to employees who perform these services. (RCW 28A.210.280)</p> <p>A practical nurse licensed pursuant to chapter 18.78 shall be exempt from training. (RCW 18.79.290 (1)(d))</p>	<p>YES</p> <p>Only if there is a student(s) requiring CIC during the school day</p> <p>Training must be provided by a licensed physician, ARNP, or RN</p>	<ol style="list-style-type: none"> 1. RCW 18.79.290 Catheterization of public and private school students 2. WAC 246-840-820 Provision for clean, intermittent catheterization in schools 3. RCW 28A.210.280 Catheterization of public and private school students 4. WSSDA Model Policy # 3417 Catheterization
CONCUSSION & HEAD INJURY		
<p>Each school district's board of directors shall work in consort with the Washington Interscholastic Activities Association (WIAA) to develop the guidelines and other pertinent information and forms to <u>inform and educate coaches, youth athletes, and their parents and/or guardians</u> of the nature and risk of concussion and head injury. (RCW 28A.600.190 (2))</p>	<p>YES</p>	<ol style="list-style-type: none"> 1. RCW 4-24-660 Liability of school districts under contracts with youth programs 2. RCW 28A.600.190 Youth sports — Concussion and head injury guidelines — Injured athlete restrictions — Short title 3. WIAA Concussion Management Guidelines 4. WSSDA Model Policy # 3422 Student Sports – Concussion and Head Injuries

Appendix 2: WASSDA Sample Policy for Concussion and Head Injuries

Policy: 3422

Section: 3000 - Students

Student Sports - Concussion and Head Injuries

The _____ Board of Directors recognizes that concussions and head injuries are commonly reported injuries in children and adolescents who participate in sports and other recreational activities. The board acknowledges that the risk of catastrophic injuries or death are significant when a concussion or head injury is not properly evaluated and managed. Therefore, all competitive sport activities in the district will be identified by the administration and all appropriate district staff, coaches and team volunteers will complete training as required in the district procedure to recognize suspicious signs and symptoms of concussion. Additionally, all coaches will comply with Washington Interscholastic Activities Association (WIAA) guidelines for the management of head injuries and concussions.

Consistent with Washington law, the district will utilize guidelines developed with the WIAA and other pertinent information and forms to inform and educate coaches, youth athletes, and their parents and/or guardians of the nature and risk of concussions or head injuries, including the dangers associated with continuing to play after a concussion or head injury.

Annually, the district will distribute a head injury and concussion information sheet to all parents and guardians of student participants in competitive sport activities. The parent/guardian and student must return a signed acknowledgement indicating that they have reviewed and understand the information provided before the student participates in any covered activity. Until this acknowledgement form is returned and on file with the district, the student may not practice or compete.

All coaches, including volunteers, will complete training as required in the district procedure.

Additionally, all coaches of competitive sport activities will comply with WIAA guidelines for the management of head injuries and concussions.

Cross References: 4260 - Use of School Facilities

Legal References: RCW 4.24.660 Liability of school districts under contract with youth programs

Chapter 28A.600 RCW Students

Management Resources: 2014 - August Issue

2009 - August Issue

Adoption Date:

Classification: **Essential**

Revised Dates: **08.09; 12.1**

Procedure Student Sports - Concussion and Head Injuries

Concussion and Head Injury Management in Student Sports

- A. Athletic Director or Administrator in Charge of Athletics Duties:**
1. **Updating:** Each spring, the athletic director, or the administrator in charge of athletics if there is no athletic director, will review any changes that have been made in forms required for concussion and head injury management by consulting with the WIAA or the WIAA Web site. If there are any updated forms, they will be adopted and used for the upcoming school year.
 2. **Identifying Sports:** By June 30 of each year, the athletic director or administrator in charge will identify competitive sport activities in the district for which compliance with the concussion and head injury policy is required. A list of competitive sports activities and the [district's policy](#) and [procedure 3422](#) will be distributed to all coaching staff and volunteers.
- B. Coach Training:** All coaches will undergo training in head injury and concussion management at least once every two years by one of the following means: (1) through attendance at a WIAA or similar clock hour presentation which uses WIAA guidelines; or (2) by completing WIAA online training.
- C. Parent Information Sheet:** On a yearly basis, a concussion and head injury information sheet will be signed and returned by the youth athlete and the athlete's parent and/or guardian prior to the youth athlete's initiating practice or competition. This information sheet may be incorporated into the parent permission sheet which allows students to participate in extracurricular athletics.
- D. Coach's Responsibility:** A youth athlete who is suspected of sustaining a concussion or head injury in a practice or game will be immediately removed from play.
- E. Return to Play After Concussion or Head Injury:** A student athlete who has been removed from play may not return to play until the athlete is evaluated by a licensed health care provider trained in the evaluation and management of concussion and receives written clearance to return to play from that health care provider. The health care provider may be a volunteer.

Adoption Date:

Classification:

Revised Dates: **08.09; 12.11**
