

10-Year Incident Monitoring Trends in Outdoor Behavioral Healthcare: Lessons learned and future directions.

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Risk in Outdoor Programming

Risk is an inherent and requisite element of wilderness and adventure-based programming, intentionally used by skilled facilitators and therapists to create a state of eustress in clients to support positive development (Russell & Harper, 2006). Providers of adventure programming strive to minimize inappropriate risks in client experiences while maintaining appropriate levels of actual and perceived risks sufficient to create the adaptive dissonance necessary to support positive change (Gass, Gillis, & Russell, 2012; Priest & Gass, 2005). In addition to physical risks, Outdoor Behavioral Healthcare (OBH) programs provide clients opportunities to confront social, emotional, and behavioral risks through Adventure Therapy (AT) interventions. This involves the prescriptive use of adventure activities by mental health professionals to kinesthetically engage clients on affective, behavioral, and cognitive levels (Gass et al, 2012). The key to this process is to manage risks so that clients are engaged in these experiences enough to foster functional change while limiting their exposure to inappropriate dangers.

One important method professionals use to manage such risks is to track incidents occurring while clients are in the field so they may better understand the factors that lead to accidents and other negative incidents. This is done to enable OBH professionals to adapt programming to reduce the likelihood of similar incidents in the future. There have been considerable efforts to assess injury and illness rates in outdoor programs over the past 20 years (Boulware, Forgey, & Martin, 2003; Auerbach, 1992).

One of the most comprehensive analyses of incidents in adventure activities comes from data developed through the WRMC/AEE Incident reporting project conducted from 1992 – 2008. This project provided

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insight into the types and severities of incidents commonly occurring in guided adventure activities, and established industry-wide injury and illness rates by activity (Leemon, 2008). While this information can serve as a benchmark to compare OBH incident rates, several differentiating factors must be considered. OBH clients differ from most clients in other forms of adventure programming in two significant ways: (1) OBH clients are primarily drawn from at-risk adolescent populations and can be placed in program against their will and (2) training in high-risk adventure activities is not the primary focus of OBH programs (Russell and Harper, 2006). It is possible that these differences in client and program level characteristics may be related to higher or lower incident rates, therefore direct comparisons of OBHIC to WRMC/AEE or other expeditionary education providers such as the National Outdoor Leadership School (NOLS) are not ideal. In addition, the WRMC data does not track incident data regarding physical restraints, a practice that is often associated with behavioral healthcare programs.

Physical Restraints

The use of physical restraints is a frequent intervention in inpatient mental health settings (Prinsen & van Delden, 2009). A review of the literature prior to 2000 reports prevalence rates of 28% -60% in psychiatric facilities serving children and youth (De Hert, Dirix, Demunter, & Correll, 2011). There is some evidence that physical restraint is an acceptable practice with children and adolescents when they are in danger of causing harm to themselves and others (Dean, Duke, George, & Scott, 2007; Delaney, 2006). However, the majority of evidence supports the contrary, showing restraints to be physically and emotionally harmful to both staff and clients (De Hert, et al., 2011; Masters et al., 2002; Miller, Hunt, & Georges, 2006). Nunno, Holden, and Tollar (2006) reported 45 fatalities related to restraints in child and adolescent mental health facilities between 1993 and 2003, and there is significant ethical concern from the national and international community about these practices (Steinert et al., 2010).

In 2003, the Substance Abuse and Mental Health Services Administration (SAMHSA) published a National Action Plan for reducing the use of restraints in mental health services. The plan suggested changes in policy to empower staff to use treatment approaches that discouraged the need for restraints, and called for improved monitoring of restraint interventions in the mental health industry (SAMHSA, 2003). Several programs have been developed to address these goals, and evidence found significant decreases in restraint rates in child and adolescent mental health facilities following their implementation (LeBel et al., 2004; Martin, Krieg, Esposito, Stubbe, & Cardona, 2008; McCue, Urcuyo, Lilo, Tobias, & Chambers, 2004; Miller, et al., 2006). Despite significant reductions in restraint rates in such programs, the National Association of State Mental Health Program Directors Research Institute (NRI) reported the national restraint rate for youth ages 13-17 in inpatient mental health care was 8.4 hours of restraint per 1000 client days, with 10.8% of all clients being restrained

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during treatment as of December 2009 (NRI, 2010). Given the Miller Bill's (Stop Child Abuse in Residential Programs for Teens Act, 2008) claims that wilderness therapy programs were excessively dangerous and frequently overused physical restraints, it became extremely important for OBH programs to examine the validity of these claims and accurately document restraint rates while working to reduce them as much as possible.

OBHC Risk Incident Tracking

The Outdoor Behavioral Healthcare Industry Council's (OBHC) risk management database specifically examines incidents, illnesses, and restraint rates in residential Outdoor Behavioral Healthcare (OBH) programs, and has contributed to this knowledge base since its inception in 2001 (Outdoor Behavioral Healthcare Research Cooperative (OBHRC), 2011; Russell & Harper, 2006). Previous analyses of OBHC data have shown promising trends in OBH program incident, illness, and restraint rates (OBHRC, 2011). The OBHC injury rate has been relatively stable since 2001, the illness rates have shown a consistent decreasing trend (OBHRC 2011), and the OBHC restraint rate in 2010 was more than four times smaller than that found in inpatient mental health facilities serving youth in the United States (Gass, et al., 2012). Although the OBHC data has clearly described incident types and frequencies, information about the circumstances surrounding each incident has not been included in the database to this point.

A deeper understanding of the factors related to incidents and actual incident rates in Outdoor Behavioral Healthcare programs is essential to practitioners seeking to improve their own risk management practices. Such findings may have substantial practical application for OBH practitioners, for once patterns in incident rates are established for OBH programs, practitioners can make informed decisions about when to increase staff to client ratios, alter programming to provide appropriate levels of physical and emotional challenges, and change timing for meals, technical skill lessons, therapeutic processing, and reflection in order to more effectively manage or reduce exposure to actual risk in the field.

The purpose of this study was to: (1) identify trending in OBHC incident rates since data collection began in 2001; (2) explore the relationships between injury, illness, restraint, and runaway rates in OBHC programs and time of day, current activity, and percentage of the program completed at the time of the incident; and (3) evaluate these results in the context of injury and illness data from the WRMC/AEE incident tracking project (Leemon, 2008), traditional expeditionary programming for youth, and national restraint and injury rate estimates for adolescent inpatient treatment centers.

Methods

The following criteria were established for incidents to be included in the annual report to the risk management database. Level one injuries and illnesses were defined as any such incident requiring a client to spend more than 12 hours out of regular programming (including time spent at rest in

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the field). Injuries and illnesses were categorized as Level two if the incident required the client be removed from regular programming for more than 24 hours. Runaways were similarly divided, with Level one runaways referring to clients who were away from regular programming for 12 hours or more, and Level two runaways referring to incidents when clients were away from their group for 24 hours or more. Restraints were defined as any action that restricted a client's freedom of movement against their will, even in the absence of physical or chemical restraint devices. While OBHIC has historically categorized such actions into three categories based on duration of the hold, they were collapsed this year to allow for easier comparison to restraint rates in other programs.

All injuries and illnesses (guides and clients), as well as runaways and restraints (clients only) meeting these criteria were recorded by OBHIC member programs for 2011 ($n = 12$) and submitted to the OBHIC incident database at the University of New Hampshire. Note that data was not collected in 2005. Starting in 2011, the activity the client/guide was engaged in, weather, number of client days in program, time of day, and date at the time of each reportable incident, as well as total client and staff field days, average length of stay, total clients enrolled, and total clients completing treatment were reported. In 2011, 181 client incidents were reported over 70,028 client field days, with an additional 28 guide incidents over 30,001 guide field days, for a total of 209 incidents over 100,029 user days.

Client and staff injury and illness rates, as well as client restraint and runaway rates, were calculated in terms of incidents per 1000 client/guide field days, where one field day was defined as a 24 hour period in a program for one client. In addition, total OBHIC incident and illness rates were calculated by aggregating client and guide incident data. Incident rates were calculated by combining Level one and Level two data in all categories. OLS regression analyses were conducted on all incident rates by year to identify trends in incident rates over time. Data was further disaggregated by activity, time of day, and percentage of program completed (based on average length of stay) at the time of incident. Data about activity duration was not collected in 2011, and therefore incident rates by activity could not be calculated. Frequency data was further explored through histograms.

Results

Injuries

The total client injury rate in OBHIC member programs for both Level 1 and 2 injuries was 0.51 per 1,000 client field days in 2011, or one client injury for every 1,961 client days of programming. When only Level 2 injuries were calculated, including both those that were field manageable and those that required evacuation for medical attention, the injury rate fell to 0.11 per 1000 client field days, or one injury every 9,091 client days. The average client injury rate for programs contributing to the OBHIC database since 2001 was 0.52 injuries per 1000 client field days, or 1 injury for every 1,923 days of client programming. Figure 1 illustrates OBHIC incident rates by year since 2001. Regression analysis indicated a slight positive trend in

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the incident rate since 2001, estimating a negligible increase of 1 additional client injury every 58,824 client field days per year. Note however that the regression coefficient of this increase was not significant ($\beta = .018, p = .34$). This suggests that with the currently available data time was not a significant prediction of client injury rate.

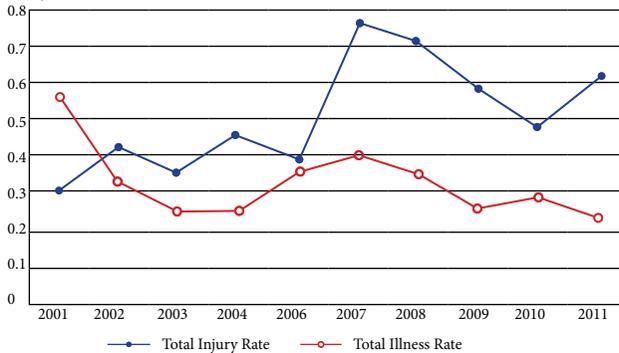
The guide injury rate on OBHIC ranged from a high of 0.83 injuries per 1000 field days in 2011 to a low of 0.32 injuries per 1000 guide field days in 2001 (see Figure 1). The 10-year average guide injury rate was 0.55 injuries per 1000 guide field days, or one guide injury for every 1,827 guide field days. Regression analysis indicated a slightly positive, but again insignificant trend in guide injury rate since 2001 ($\beta = .023, p = .107$).

Figure 1. Client and guide injury rates per thousand client/guide field days between 2001 and 2011



Total OBHIC annual injury rates are displayed in Figure 2. The average total injury rate in OBHIC programs since 2001 was 0.53 injuries per thousand field days, or about one injury for every 1,887 field days. The total injury rate ranged from a low of 0.36 per thousand field days in 2003 to a high of 0.75 injuries per thousand field days in 2007.

Figure 2. OBHIC total injury and illness rates per thousand participant days (clients & staff)

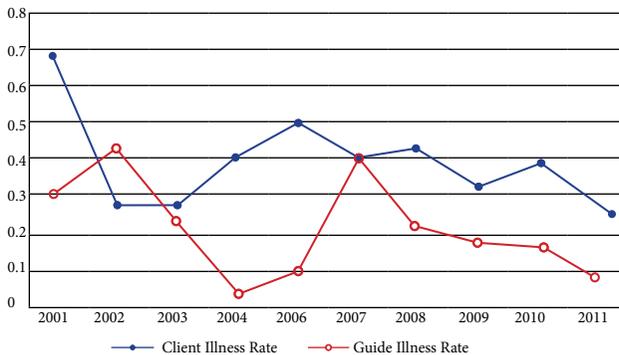


Illnesses

Client illness rates (see Figure 3) have ranged from 0.26 per 1000 client field days in 2003 and 2011 to 0.69 illnesses per 1000 client field days in 2006. Practically speaking, this range indicates at the highest point in 2006 there was one client illness for every 1449 client field days, while at the lowest illness rate in 2003 and 2011 there was one client illness every 4348 client field days. The average illness rate in OBHIC programs since 2001 was 0.40 illnesses per 1000 client field days or one client illness for every 2,529 day of client programming. Regression analysis indicated a slight negative trend in illness rates since 2001, estimating a decrease of one illness for every 71,429 client field days per year. As with the injury analysis, the regression coefficient was not significant ($\beta = -.014, p = .287$), indicating that time is not a significant predictor of illness rate with the available data.

Guide illness rates are displayed by year in Figure 3. The 10 year average guide illness rate in OBHIC programs was 0.22 illnesses per 1000 guide field days, or one guide illness every 4,632 days. The guide illness rate reached its lowest historical level in 2011, when there was one guide illness every 10,000 guide field days. Regression analysis indicated a slightly negative, but statistically insignificant trend in guide illness rates ($\beta = -.017, p = .189$).

Figure 3. Client and guide illness rates per thousand client/guide field days from 2001-2011



Client Restraints

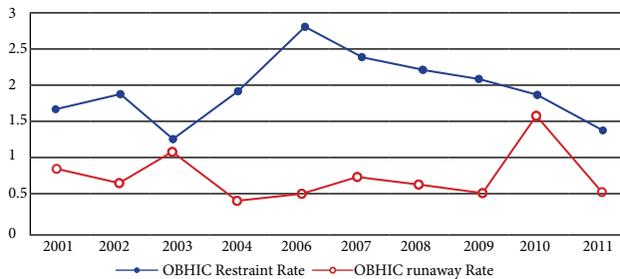
As illustrated in Figure 4, OBHIC restraint rates have been decreasing since 2006. It is of note that when OBHIC reported their highest restraint rate in 2006, one program reported 42% of all restraints. Since 2001, the OBHIC programs have reported an average restraint rate of 1.95 restraints per 1000 client field days, or one restraint for every 513 client days. In 2011, OBHIC reported the lowest restraint rate since 2001, with one restraint occurring every 763 days. Regression analysis suggested a slightly positive but statistically insignificant trend in restraint rate since 2001 ($\beta = .010, p = .828$).

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Runaways

The OBHIC runaway rate has ranged from a low of 0.32 per one thousand client days in 2004 to a high of 1.54 runaways per thousand client days in 2010. This translates to one runaway for every 3,125 client days in 2004 and one runaway every 649 client days in 2010. The increased runaway rate in 2010 can be largely attributed to one program reporting 82% of the runaways that year. The average OBHIC runaway rate since 2001 was 0.73 per thousand client days, or one runaway every 1,368 days. Excluding data from 2010, this rate fell to 0.63 runaways per thousand client field days or one runaway every 1,599 client days. Regression analysis indicated a relatively stable trend in the OBHIC runaway rate since 2001, though the relationship was statistically insignificant ($\beta = .005, p = .886$).

Figure 4. Client restraint and runaway rates per thousand client field days between 2001 and 2011



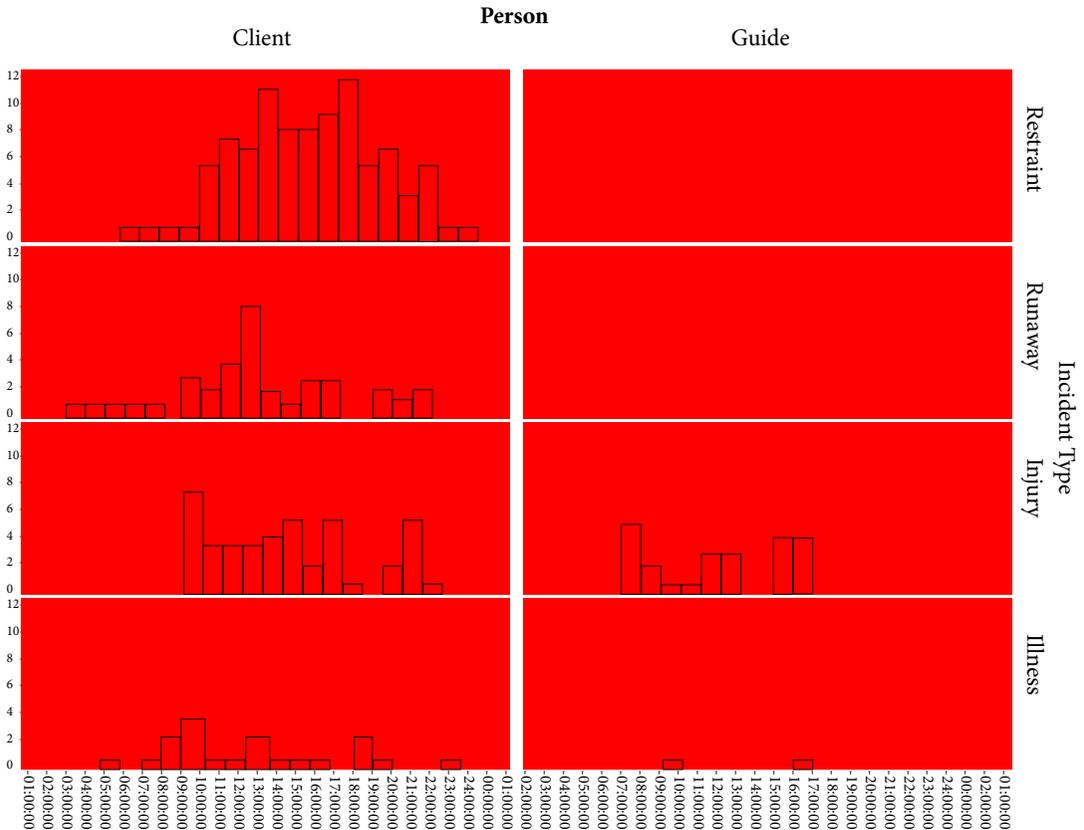
Incident Frequency and Time of Day

Figure 5 illustrates the frequency of restraints, runaways, injuries, and illnesses for both clients and staff by time of day. Client injuries did not occur before 9:00am, and they reached their greatest frequency between 9:00-10:00am. There were additional increases in injury frequency between 3:00-4:00pm and 5:00-6:00pm. Frequency of staff injuries also peaked early in the day between 7:00am and 8:00am, with a second increase between 3:00-5:00pm.

While there were insufficient staff illnesses data to identify any trends, the most frequent time of onset for client illness was 8:00-10:00 am, with additional increases in frequency around lunch and dinner time. Restraint frequency was very low before 9:00am, and most frequent between 12:30-1:30pm and 4:00-6:00pm. Runaway frequency was also highest between 12:30-1:30pm, and exhibited secondary increases from 9:00-10:00 am and 4:00-6:00pm.

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Figure 5. OBHIC incidents by type, person, and time of day for 2011



Incident Frequency and Percentage of Program Completed

Figure 6 illustrates incident frequency by the percentage of the program the client had completed at the time of the incident for 2011. Incidents that occurred when the client had been in the program for longer than that program's average length of stay at the time of the incident were coded as 105% of the program completed. Data regarding staff days in program were not collected, and so the results refer only to client incidents for 2011.

Injury frequency was also greatest earlier in the program for clients, but unlike restraint and runaway frequencies, peaked between 6% and 20% of average treatment time. Injury frequency increased again slightly at 50% of average treatment time, then tapered off, with the exception of a small increase in injury frequency for clients who had been in treatment longer than the average length of stay for their respective program.

Illness frequency peaked early in the program, and tapered down over

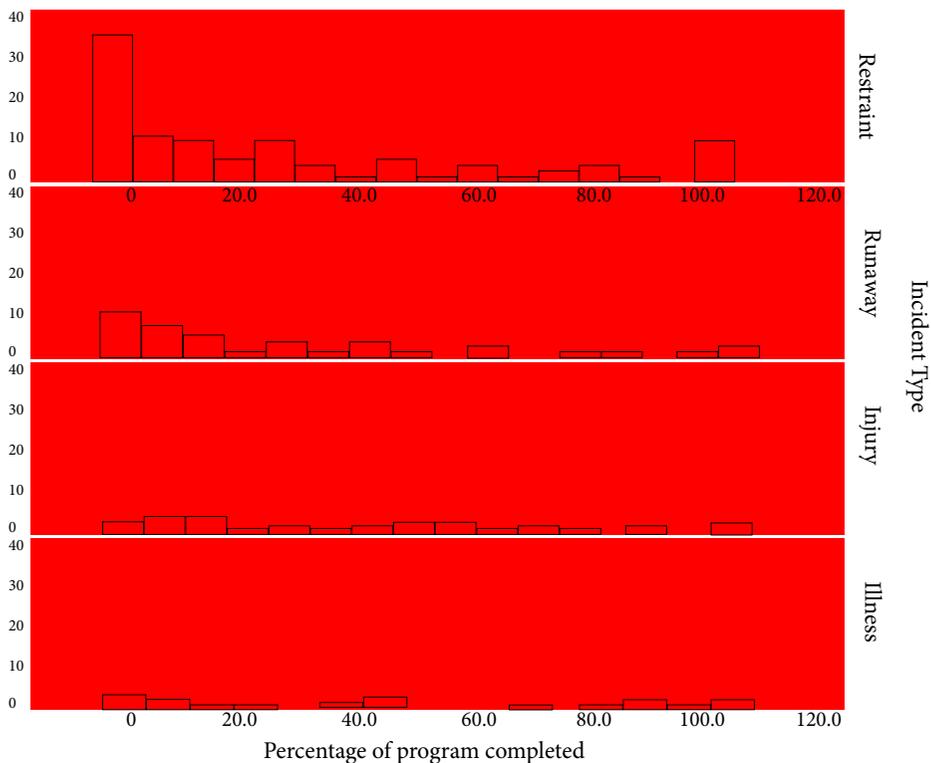
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the first 20% of average time in treatment. There was a slight increase in illness frequency at the 40% program completion mark, followed by very few illnesses until the final 20% of time in treatment. There was a slight increase in illnesses reported for clients who had been in treatment longer than the average length of stay at their respective program.

Restraints most frequently occurred at the very beginning of treatment, with about 41% of all restraints reported during the first 6% of average treatment time and 64% of all restraints reported during the first 20% of average treatment time. There was a small increase in restraint frequency for clients who had been in treatment longer than the average length of stay for their respective program.

Runaways were also most frequent at the beginning of the program, with about 31% of all runaways reported during the first 6% of average treatment time and 57% of all runaways reported during the first 20% of average treatment time. As with injury, illness, and restraint frequency, there was a slight increase in runaway frequency for clients who had been in treatment longer than the average length of stay for their respective program.

Figure 6. Client incidents by incident type and %age of program completed at time of incident for 2011



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Incident Frequency and Activity

Activity data were available for 166 of 182 client incidents and all 28 staff incidents in 2011. About 56% of all client incidents and 54% of all staff incidents (see Table 1) on OBHIC programs in 2011 occurred during times of transition or while hiking. No comparative analyses can be made about the relative safety of individual activities, as the number of participant days devoted to each activity listed was not reported in 2011.

In 2011, client injuries most frequently occurred while clients were hiking (51.5%), in transition from one activity to another (24.2%), and while breaking camp and obtaining water (3.1%). Staff injuries were most common while staff were hiking (36%), in transition from one activity to another (16%), or were caused by a client (8%). Client illnesses were most commonly reported while clients were hiking (29.4%), during meal time (23.5%), and while clients were sleeping (17.6%). Staff illnesses were most frequently reported while hiking (67%) and while hiking (33%), however, only three staff illnesses were reported in 2011. More data are needed before a definitive pattern in staff illnesses by activity can be established.

Restraints were most frequent while clients were in transition from one activity to another (37%), hiking (14.8%), and during the intake process (9.9%). Runaways were most frequent while clients were hiking (34.3%), in transition from one activity to the next (20%), and while sleeping (11.4%).

Table 1: Client incident frequencies by incident type and activity*

		Client				Staff			Total		
		Restraint	Runaway	Injury	Illness	Client Sub-Total	Injury	Illness	Staff Sub-Total	All Incidents	
Activity at time of incident	Hiking	12 (14.8%)	12 (34.3%)	17 (51.5%)	5 (29.4%)	46 (27.6%)	9 (36.0%)	2 (66.7%)	11 (39.3%)	57 (29.4%)	
	Solo	0	1 (2.9%)	0	0	1 (.06%)	0	0	0	1 (0.5%)	
	Group	1 (1.2%)	1 (2.9%)	0	1 (5.9%)	3 (1.8%)	0	0	0	3 (1.5%)	
	Latrine	0	2 (5.7%)	0	0	2 (1.2%)	0	0	0	2 (1.0%)	
	Breaking Camp	0	1 (2.9%)	1 (3.1%)	0	2 (1.2%)	1 (4.0%)	0	1 (3.6%)	3 (1.5%)	
	Transition/In Camp	30 (37.0%)	7 (20.0%)	8 (24.2%)	2 (11.8%)	47 (28.3%)	4 (16.0%)	0	4 (14.3%)	51 (26.2%)	
	Meal Time	5 (6.2%)	0	0	4 (23.5%)	9 (5.4%)	1 (4.0%)	0	1 (3.6%)	10 (5.2%)	
	Getting Water	6 (7.4%)	1 (2.9%)	1 (3.1%)	0	8 (4.8%)	1 (4.0%)	0	1 (3.6%)	9 (4.6%)	
	Intake	8 (9.9%)	0	0	0	8 (4.8%)	0	0	0	8 (4.1%)	
	Medical Procedure	3 (3.8%)	0	1 (3.1%)	0	4 (2.4%)	0	0	0	4 (2.1%)	
	Sleeping	0	4 (11.4%)	0	3 (17.6%)	7 (4.2%)	0	0	0	7 (3.6%)	
	Camp Set Up	1 (1.2%)	1 (2.9%)	1 (3.0%)	0	3 (1.8%)	0	0	0	3 (1.5%)	
	Med Run	0	2 (5.7%)	0	0	2 (1.2%)	0	0	0	2 (1.0%)	
	Other	7 (8.6%)	0	1 (3.0%)	2 (11.8%)	10 (6.0%)	2 (4.0%)	1 (33.3%)	3 (10.7%)	13 (6.7%)	
	Group/Staff Change	1 (1.2%)	0	0	0	1 (0.6%)	0	0	0	1 (0.5%)	
	Transport	3 (3.8%)	0	0	0	3 (1.8%)	0	0	0	3 (1.5%)	
	Therapy (Indiv)	2 (2.5%)	0	0	0	2 (1.2%)	0	0	0	2 (1.0%)	
	Bed time	1 (1.2%)	0	0	0	1 (0.6%)	0	0	0	1 (0.5%)	
	Cooking	0	0	1 (3.0%)	0	1 (0.6%)	0	0	0	1 (0.5%)	
	Using Tool/Knife	0	0	1 (3.0%)	0	1 (0.6%)	3 (12%)	0	3 (10.7%)	4 (2.1%)	
	Horses	0	1 (2.9%)	0	0	1 (0.6%)	1 (4.0%)	0	1 (3.6%)	2 (1.0%)	
	Surfing	0	1 (2.9%)	0	0	1 (0.6%)	0	0	0	1 (0.5%)	
	Canoeing	1 (1.2%)	1 (2.9%)	0	0	2 (1.2%)	0	0	0	2 (1.0%)	
	XC Skiing	0	0	1 (3.0%)	0	1 (0.6%)	1 (4.0%)	0	1 (3.5%)	1 (0.5%)	
	Caused by Client	0	0	0	0	0	2 (8.0%)	0	2 (7.1%)	2 (1.0%)	
	Total		81	35	33	17	166	25	3	28	194

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Discussion

The purpose of this study was to address the following research questions:

1. What were the trends in OBHIC annual incident rates since 2001?
2. What were the relationships between OBHIC client and staff incident frequencies and time of day, percentage of program completed, and activity at the time of an incident?
3. How does the OBHIC incident data compare to data established through the AEE/WRMC incident monitoring project (Leemon, 2008), traditional expeditionary education courses for youth (NOLS, 2011), and national restraint/injury data for youth in inpatient mental health services?

10-Year OBHIC Incident Trends

While regression analyses of OBHIC incident rates over time did not show any significant relationships between incident rate and time, they did indicate that injury, illness, restraint, and runaway rates appear relatively stable over the 10 year history of the OBHIC incident tracking project. Despite this, there are some variations in the data that warrant attention. First, in 2007, when the peak client injury rate was reported, OBHIC programs also experienced record high enrollment. It is possible that in order to accommodate this, there were more new staff than usual in the field, or that staff experienced less down time between shifts than in other years, leading to an elevated injury rate. Further exploration of the impact of guides' level of experience and duty cycles are warranted in future analyses.

Second, when OBHIC reported their highest restraint rate in 2006, it was the only year where a program that worked exclusively with adjudicated youth participated in the incident reporting project. This program reported 40% of restraints lasting 30 minutes or longer, while another program reported 45.6% of all restraints lasting less than 30 minutes. It is possible that different standards of practice in the adjudicated youth program, and inconsistencies in restraint reporting from the other outlier program, significantly impacted the restraint rate for 2006. Future research should include analysis of client and program level characteristics to better understand their relationship to incident trends.

OBHIC Incident Frequencies and Time of Day, Percentage of Program Completion, and Activity

The incident trends by time of day displayed in Figure 5 reflect anecdotal trends commonly reported by field staff. Injury and illness frequency increase significantly early in the day, or about the time when OBHIC groups break camp and begin the day's travel. While restraint and runaway frequencies also increase at this time, they are highest around lunch time, when clients were often transitioning from a meal at rest back to travel. Restraint, runaway, and injury frequencies all increased again in the late afternoon, when clients are often coming to the end of a long day of travel, or in transition before the evening meal. This data suggests that

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programs may benefit from exploring ways to help clients better manage transitions from states of relative rest to travel.

The majority of OBHIC incidents occurred early in a client's stay in program ; 56.9% of all restraints, 54.3% of all runaways, and 40% of all injuries occurred during the first 20% of clients' time in treatment. There also was a significant increase in incidents for those clients who had been in treatment longer than the average length of stay for their program. This suggests that programs could benefit from developing strategies to better help clients transition into program. It is possible that increased staff to client ratios, contact time with clinical staff, and reduced intensity of travel early in the program might help to further decrease incident rates early in treatment, and should be further explored.

Although the present results do not allow for the calculation of incident rates by activity, and no statements about the relative risks of each activity type can be made, there are some clear trends. That the majority of injuries occur while groups are hiking is not surprising; the WRMC/AEE Incident Reporting Project showed that the most common type of injury during wilderness-based programming with youth were athletic injuries such as sprains and strains (Leemon, 2008). That incident rates are also elevated during transition times on OBHIC programs suggests that it would be beneficial for programs to explore strategies to help clients better cope with these times of change. Further research into factors related to incidents occurring during these times is warranted.

OBHIC Incident Data in Relation to Comparative Injury Rates

The U.S. Center for Disease Control and Prevention estimated the national average rate of injuries for adolescents treated in U.S. hospital emergency rooms was 0.38 per 1000 days in 2010 (WISQARS, 2011). The rate of injuries in Outdoor Behavioral Healthcare programs in 2011 was 0.51 injuries per 1000 days, only increasing the actual risk of injury to an adolescent by 0.13 incidents per 1000 days (or 1 additional incident every 7692 participant days). Given that most clients who participate in Outdoor Behavioral Healthcare programs are generally involved in higher risk behaviors than the general population statistic reported above (e.g., substance use, reckless driving, self-abusive behaviors), it is quite plausible to state that given the high risk behaviors of these clients, and the current state of risk management practices in Outdoor Behavioral Healthcare, there is less actual risk for these youth while on OBHIC programs than while in the general population (Gass, Gillis, & Russell, 2012).

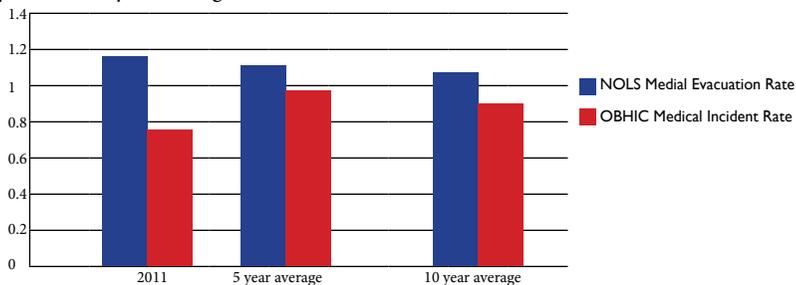
Note this conservative Figure used by OBHIC includes injuries that were treatable in the field, and did not require additional medical attention. When only those injuries that required OBHIC participants be removed from regular programming for 24 hours or more were counted (including some treated in the field, and some who were evacuated to emergency rooms/medical attention), the OBHIC injury rate fell to 0.11 in 2011, or one

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injury requiring medical attention every 9,091 client days. The U.S. Center for Disease Control and Prevention estimated the national average rate of injuries for adolescents treated in U.S. hospital emergency rooms was 0.38 per 1000 days in 2010 (WISQARS, 2011). Therefore, in 2011, OBHIC program clients were about three times more likely to go to the emergency room for an injury at home as they were while on program.

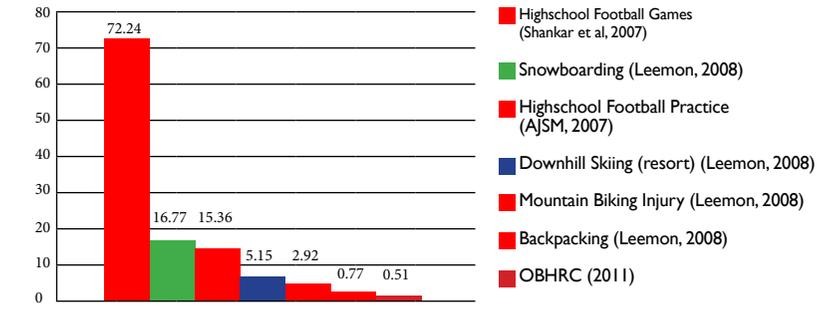
The National Outdoor Leadership School (NOLS) offers wilderness-based expeditionary education experiences to youth and adults, with a focus on technical and leadership skill development. While OBHIC injury rates cannot be directly compared to NOLS because of differences in client characteristics, purpose of programming and definitions for medical incidents, NOLS is viewed as a leader in wilderness risk management; until more longitudinal incident data is compiled by OBHIC, NOLS can serve as a benchmark to quality. The NOLS incident definitions are more inclusive than OBHIC's, so Figure 7 compares the NOLS medical evacuation rate (injuries and illness) to the total medical incident rate of OBHIC programs (all injuries and illnesses, including those managed in the field) for 2011, five year average, and 10 year average values. The comparison suggests that OBHIC injury and illness rates are slightly below those of traditional educational expeditionary programs for youth.

Figure 7. OBHIC medical incident rates vs NOLS medical evacuation rates in 2011, 5-year and 10-year averages



This analysis clearly supported OBHIC programs, contrary to claims made against wilderness therapy programs in the Miller Bill (Stop Child Abuse in Residential Care Act, 2008). OBHIC program members have been able to provide quality wilderness-based interventions to clients without exposing them to undo levels of risk. Further support for the ability of OBHIC programs to effectively manage risk to clients was apparent when comparing OBHIC incident rates to those of more common activities and guided outdoor pursuits (see Figure 8). Participants on guided backcountry, mountain biking, downhill skiing, and snowboarding courses are about 1.5, 5.5, 10, and 33 times as likely to be injured as OBHIC clients respectively (Leemon, 2008). When compared to traditional team sports, high school football players are 30 times more likely to be injured during a practice, and 141 times as likely to be injured during a game as an OBHIC client in treatment.

Figure 8. OBHIC 2011 client injury rates compared to incident rates in organized outdoor activities



A further charge against wilderness therapy providers in the Miller Bill is the overuse of physical restraints in the treatment process. When compared to existing national data on restraint rates in inpatient treatment facilities youth (assuming the average length of restraint in these facilities was 60 minutes), OBHIC clients were more six times less likely to be restrained in treatment than youth in inpatient mental health care in the US (NRI, 2010). While it is necessary to consider the population served by inpatient facilities likely presented with higher levels of symptom acuity than clients of OBHIC programs, this comparison provides compelling evidence against the claims in the Miller Bill.

Limitations

While the study results are promising, there are several limitations that need to be considered. First, the programs participating in the OBHIC Risk Incident Monitoring Project have not been consistent throughout the history of data collection. Additionally, some contributing programs are much larger than others. Both of these variables may have led to inconsistencies in the results, and also limit the extent to which study conclusions can be generalized across programs. As stated earlier, programmatic differences may have a significant impact on incident rates, and such differences were not accounted for in this analysis.

Second, although data collection was based on a common set of incident definitions, reporting was generally done at the end of the year and it is possible that staff across different organization had different interpretations of the incident definitions. This may have led to some inconsistencies in the data. OBHIC will be transitioning to live online incident reporting starting in 2013, which may help to address this concern.

Data collection did not include any identifying information, and as such, it was impossible to identify clients involved in more than one incident. Future research should include some method for tracking this, and potentially linking incident data to individual level demographic and outcome assessments.

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Third, this data was only collected for those programs participating in the OBHIC research database. Generalization of the findings needs to be restricted to those programs participating in the study and those following the risk management procedures of OBHIC programs.

Finally, this study did not allow for comparisons of the relative risk associated with participating in different activities while on OBHIC programs. Future studies should include information about the time spent in each activity to improve the understanding of the risks associated with different activities and methods of travel for OBHIC clients and guides.

Conclusions

The OBHIC Risk Incident Project is the longest-operating active risk management database tracking incidents across multiple programs for any outdoor pursuits, including wilderness therapy. Despite the limitations of this study, results indicated OBHIC programs provide wilderness-based treatment programs to clients without exposing them to relatively low levels of physical risk. Continued expansion of the data collected through this project will continue to expand understanding of the factors related to incidents in OBH programs. OBH service providers can greatly benefit from participating in this project, and from sharing their methods for addressing risk in the back country, especially in those situations shown to be related to higher incident frequencies. Continuing risk-related incident research in OBH programs is essential, and may help inform programmatic changes to further reduce clients' exposure to inappropriate risks in the future.

References

- Auerbach, P.S. (1992). Wilderness medicine epidemiology. *Journal of Wilderness Medicine*, 3, 111-112.
- Boulware, D. R., Forgey, W.W., & Matrin, W.J. (2003). Medical risks of wilderness hiking. *The American Journal of Medicine*, 114, 288-293.
- Crane-Ross, D., & Sweeny, H.A. (2010). PI survey results report #4. Columbus, OH: Ohio Department of Mental Health.
- NRI. (2012). National public rates: Behavioral healthcare performance measurement system. Falls Church, VA: National Association of State Mental Health Program Directors Research Institute, Inc., (NRI)
- De Hert, M., Dirix, N., Demunter, H., & Correll, C. (2011). Prevalence and correlates of seclusion and restraint use in children and adolescents: a systematic review. *European Child Adolescent Psychiatry*, 1(10). doi: 10.1007/s00787-011-0160-x
- Dean, A. J., Duke, S. G., George, M., & Scott, J. (2007). Behavioral Management Leads to Reduction in Aggression in a Child and Adolescent Psychiatric Inpatient Unit. *Journal of the American Academy of Child and Adolescent Psychiatry*, 46(6), 711-720.
- Delaney, K. R. (2006). Evidence Base for Practice: Reduction of Restraint and Seclusion Use During Child and Adolescent Psychiatric Inpatient Treatment. *Worldviews on Evidence-Based Nursing*, 3(1), 19-30. doi: 10.1111/j.1741-6787.2006.00043.x
- Gass, M.A., Gillis, H. L., & Russell, K. (2012). *Adventure therapy: Theory, research, and practice*. New York, NY: Routledge.
- LeBel, J., Stromberg, N., Duckworth, K., Kerzner, J., Goldstein, R., Weeks, M., . . . Sudders, M. (2004). Child and Adolescent Inpatient Restraint Reduction: A State Initiative to Promote Strength-Based Care. *Journal of the American Academy of Child & Adolescent Psychiatry*, 43(1), 37-45. doi: 10.1097/00004583-200401000-00013
- Leemon, D. (2008). Adventure Program Risk Management Report: Incident Data from 1998-2007. Lander, WY: NOLS, Wilderness Risk Managers Committee, and Association for Experiential Education.
- Martin, A., Krieg, H., Esposito, F., Stubbe, D., & Cardona, L. (2008). Reduction of Restraint and Seclusion Through Collaborative Problem Solving: A Five-Year Prospective Inpatient Study. *Psychiatr Serv*, 59(12), 1406-1412. doi: 10.1176/appi.ps.59.12.1406
- Masters, K., Bellomci, C., Bernet, W., Arnold, V., Beitchman, J., Benson, R., & Stock, S. (2002). Practice Parameter for the Prevention and Management of Aggressive Behavior in Child and Adolescent Psychiatric Institutions, With Special Reference to Seclusion and Restraint. *Journal of the American Academy of Child & Adolescent Psychiatry*, 41(2, Supplement 1), 4S-25S. doi: 10.1097/00004583-200202001-00002
- McCue, R., Urcuyo, L., Lili, Y., Tobias, T., & Chambers, M. (2004). Reducing restraint use in a public psychiatric inpatient service. *The Journal of Behavioral Health Services and Research*, 31(2), 217-224. doi: 10.1007/bf02287384

LESSONS LEARNED AND FUTURE DIRECTIONS

- Miller, J. A., Hunt, D. P., & Georges, M. A. (2006). Reduction of Physical Restraints in Residential Treatment Facilities. [Article]. *Journal of Disability Policy Studies*, 16(4), 202-208.
- NOLS. (2011). Risk Management at NOLS. Lander, WY: National Outdoor Leadership School.
- NRI. (2010). National Public Rates - Age stratification report restraint hours: National Association of State Mental Health Program Directors Research Institute.
- NRI. (2012). National public rates: Behavioral healthcare performance measurement system. Falls Church, VA: National Association of State Mental Health Program Directors Research Institute, Inc., (NRI)
- Nunno, M. A., Holden, M. J., & Tollar, A. (2006). Learning from tragedy: A survey of child and adolescent restraint fatalities. *Child Abuse & Neglect*, 30(12), 1333-1342. doi: 10.1016/j.chiabu.2006.02.015
- Priest, S., & Gass, M. A. (2005). Effective leadership in adventure programming (2nd ed.). Champaign, IL: Human Kinetics.
- Prinsen, E. J. D., & van Delden, J. J. M. (2009). Can we justify eliminating coercive measures in psychiatry? *Journal of Medical Ethics*, 35(1), 69-73. doi: 10.1136/jme.2007.022780
- Risk Management at NOLS. (2011). Lander, WY: National Outdoor Leadership School.
- Russell, K., & Harper, N. (2006). Incident Monitoring In Outdoor Behavioral Healthcare Programs: A Four-year Summary of Restraint, Runaway, Injury, and Illness Rates. *Journal of Therapeutic School sand Programs*, 1(1), 70-90.
- SAMHSA. (2003). Summary Report A national call to action: Eliminating the use of seclusion and restraint. Washington, DC: US Department of Health and Human Services.
- Shankar, P. R., Fields, S. K., Collins, C. L., Dick, R. W., & Comstock, R. D. (2007). Epidemiology of High School and Collegiate Football Injuries in the United States, 2005–2006. *The American Journal of Sports Medicine*, 35(8), 1295-1303. doi: 10.1177/0363546507299745
- Steinert, T., Lepping, P., Bernhardsgrütter, R., Conca, A., Hatling, T., Janssen, W., . . . Whittington, R. (2010). Incidence of seclusion and restraint in psychiatric hospitals: a literature review and survey of international trends. *Social Psychiatry and Psychiatric Epidemiology*, 45(9), 889-897. doi: 10.1007/s00127-009-0132-3
- Stop Child Abuse in Residential Programs for Teens Act, HR 5876 (2008).
- WISQARS. (2011). Overall all injury causes nonfatal injuries and rates per 100,000: 2010, United States, all races, both sexes, ages 13-21. Washington, D.C.: Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC.