Research

Restraint, Restrictive Interventions, and Seclusion of People with Intellectual and Developmental Disabilities

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Abstract

The use of restraint, restrictive interventions, and seclusion are hotly contested with inconclusive evidence of their effectiveness. Because the use of restraint and seclusion on people with intellectual and developmental disabilities (IDD) is controversial, and its effectiveness doubtable, the aim of this study was to explore their allocation in Medicaid HCBS 1915(c) waivers, the largest providers of long-term services and supports (LTSS) for people with IDD. To do so, 111 FY 2015 IDD waivers from across the nation were examined to determine if and how states permitted restraint, restrictive interventions, and seclusion. Findings revealed an overwhelming majority of waivers permitted the use of restraint (78.4%) and restrictive interventions (75.7%). A smaller proportion (24.3%) allowed the use of seclusion.

Keywords: Medicaid home and community-based services (HCBS) 1915(c) waivers; people with intellectual and developmental disabilities; community living; restraint and seclusion.

Restraint, Restrictive Intervention, and Seclusion of People with Intellectual and Developmental Disabilities

Interventions such as restraint, restrictive interventions, and seclusion have been traditionally applied to people with psychiatric disabilities and people with intellectual and developmental disabilities (IDD), particularly when they exhibit aggressive behavior; they are often used in institutions, schools, nursing homes, and hospitals (Ferlger, 2008). Yet, these interventions prove to be controversial. While the literature presents conflicting results about the safety of restraint and seclusion, ethical concerns exist regarding the use of restraint, including concerns about the loss of personal freedom and rights (Scheirs, Blok, Tolhoek, Aouat, & Glimmerveen, 2012), not to mention evidence of physical and psychological harm. Additionally, staff may believe that restraint and seclusion are the safest and most effective ways to interact with an aggressive individual with disabilities despite evidence of negative outcomes of these interventions (e.g., death, injury, and/or emotional trauma) (Knox & Holloman, 2012).

Table 1 describes the general definitions of restraint, restrictive interventions, and seclusion. There are three different types of restraint that may be used for people displaying aggressive behavior: physical, mechanical, and chemical. Physical restraint is the application of force to address aggressive behavior; therefore, it is different from other types of physical contact that do not involve force and/or aggressive behavior (e.g., physically guiding an individual by holding their hand or physical contact to comfort an upset individual). Often, mechanical restraint is conceptualized as a type of physical restraint. However, mechanical restraint uses objects (e.g., straps) to restrain an individual while physical restraint uses bodily force to inhibit an individual. Chemical restraint introduces medications into the body in order to control or address aggressive behavior. Restraint may be planned or used in an emergency or

crisis situation; emergency or crisis restraint is less safe than planned restraint (Williams, 2009). Factors such as organizational and governmental policies, staff training, and staff behavior affect the extent and application of restraint use (Ferlger, 2008).

Restrictive interventions may be confused with physical restraints or even seclusion. Generally, restrictive interventions impinge upon the rights of people who are exhibiting aggressive or problematic behavior. Examples of restrictive interventions may include: preventing a person from leaving their house or visiting a friend; loss of other privileges; loss of access to personal property (e.g., iPad or video game system); or, increased supervision.

Seclusion involves the separation of someone from others in a room which may be locked or unlocked, depending on policy.

Controversies and Ethical Concerns

People with IDD may exhibit various types of aggressive behavior, such as property damage, physical aggression, sexual aggression, verbal aggression, and self-oriented aggression (Crocker et al., 2006). Professionals generally agree that physical restraint should be applied only to address serious aggressive behavior (Luiselli, 2009). However, a Canadian study of people with IDD found that those who communicated using pictograms, took anxiolytics, exhibited more severe aggressive behavior, and/or had a personal support worker with less experience were more likely than their counterparts to encounter restrictive interventions (Merineau-Cote & Morin, 2013).

Controversies and ethical concerns around using restraint, restrictive interventions, and seclusion coalesce around the physical health risks, psychological trauma, limitations of personal

freedom, and humiliation that the procedures impose upon people exhibiting aggressive behavior.

Restraint poses the most serious physical health risks to people with disabilities. Despite the continued use of restraint, literature demonstrates that it poses serious threats to the health and safety of people with IDD and the person performing the restraint, especially when the restraint is not performed correctly (Government Accountability Office, 1999). Restraint may result in death to the people being restrained but also physical and/or emotional harm to the person being restrained and/or the person restraining (Evans, Wood, & Lambert, 2003; Ferleger, 2008; Fisher, 1994; Government Accountability Office, 1999; Mohr, Petti, & Moh, 2003; Rakhmatullina, Taub, & Jacob, 2013). A study of emergency restraints found that around one in three restraints resulted in injury, though most of the injuries were minor (Tilli & Spreat, 2009). Restraints that involve neck holds or that obstruct breathing (nose and mouth) have higher risks of fatality (Ferlger, 2008). A specific type of mechanical restraint, called “hobble tying” is especially dangerous. Hobble tying occurs when a person is laying on their stomach (prone) and their feet and ankles are tied together behind their backs; the tie acts as the mechanical restraint. A study of 214 excited delirium cases by Stratton, Rogers, and Brickett (2001) found that death occurred in 18 cases due to struggle or restraint using the hobble tying mechanical restraint.

These procedures can also cause psychological trauma. Physical restraint can elicit past memories of abuse for the person being restrained (Fish & Culshaw, 2005). Research has also found that staff implementing physical interventions found them to be upsetting and traumatic and consequently experienced feelings of guilt and self-condemnation when implementing these physical measures (Fish & Culshaw, 2005). Due to the emotional trauma associated with

physical interventions, staff reported that these were a last resort though people with disabilities did not necessarily agree with this statement (Fish & Culshaw, 2005).

In addition to physical and psychological risks, these techniques also limit freedom, dignity, and personal choice. One of the critiques of restraint is the humiliation of the person to which the intervention is being applied (Ferleger, 2008). The very definition of restrictive interventions, for example, relies on the loss of personal freedom and rights.

In addition, the use of restraint, restrictive interventions, and seclusion may exacerbate problem behaviors, mitigating the effectiveness of the procedures (Luiselli, 2009). A literature review by Busch and Shore (2000) found a lack of evidence to support the evidence of benefits and risks of these procedures in addressing aggressive behavior in adults. Moreover, research also documents the low social acceptability of restraint use (Tilli & Spreat, 2009).

Medicaid Home and Community-Based Services Waivers

Medicaid Home and Community-Based Services (HCBS) 1915(c) waivers were added to the Social Security Act in the 1980s during a time when people with disabilities received most of their services and supports in institutions. The purpose of the program was to expand *successful* community living via community-based services. Prior to the creation of HCBS waivers, people with IDD who did not live with families had few options other than segregated institutional settings. However, the HCBS program allows service delivery in integrated community-based settings, including individual, family, and group homes.

Waivers allow states to ‘waive’ key Social Security Act requirements including statewideness, comparability of services, and income and resource rules, which permit waivers to determine target groups, services furnished, participant direction, provider qualifications, health and welfare strategies, and cost-effective delivery (Disabled and Elderly Health Programs Group,

Center for Medicaid and State Operations, Centers for Medicare and Medicaid Services, & Department of Health and Human Services, 2015). As such, states are able to target underserved populations of people with disabilities or chronic health conditions (e.g., HIV/AIDS, traumatic brain injury, older adults), and/or provide customized services to fit an elevated need for that population (Centers for Medicare & Medicaid Services, n.d.). For example, waivers may provide services such as personal assistance, day habilitation, or residential habilitation (Centers for Medicare & Medicaid Services, n.d.). The Centers for Medicare and Medicaid Services (CMS) requires waivers to describe: CMS assurances and requirements; levels of care; waiver administration and operation; participant access and eligibility; participant services, including limitations and restrictions; service planning and delivery; participant direction of services; participant rights; participant safeguards; quality improvement strategies; financial accountability; and cost-neutrality demonstrations (Disabled and Elderly Health Programs Group et al., 2015). While they are required to detail all of these parts, the flexibility granted to states by the waiver program has resulted in a wide variance across states in terms of service provision and waiver administration (Friedman, 2017).

Surpassing intermediate care facilities for people with developmental disabilities (ICFDD) in 2000, HCBS waivers are now the largest provider of long-term services and supports (LTSS) for people with IDD (Braddock et al., 2015; Rizzolo, Friedman, Lulinski-Norris, & Braddock, 2013). In fiscal year (FY) 2015, HCBS waivers projected spending $25.6 billion in federal funds for community services for 630,000 people with IDD (Friedman, 2017).

Because the use of restraint, restrictive interventions, and seclusion on people with IDD is controversial, and its effectiveness doubtable, the aim of this study was to explore its allowance in Medicaid HCBS waivers. To our knowledge, this is the first study to explore how

these HCBS waivers across the nation permit these techniques. Doing so will allow us to not only map which states are permitting the use of these controversial techniques, and how they are doing so, but also provide research for advocates to target areas of need to have these harmful procedures prohibited. To examine these techniques, FY 2015 Medicaid HCBS waivers from across the nation were explored to determine if and how states allowed restraint, restrictive interventions, and seclusion of people with IDD. In addition to detailing characteristics of the use of restraint, restrictive interventions, and seclusion across waivers, we also explored if allowance of these techniques differed depending on the waiver's target populations, or provision of mental/behavioral health services.

Methods

People with disabilities receive Medicaid through a number of options, including 1115 demonstrations waivers, 1915(b) managed care waivers, 1915(i) HCBS state plan options, 1915(k) Community First Choice, and HCBS 1915(c) waivers. Medicaid HCBS 1915(c) are the largest providers of LTSS for people with IDD and were therefore the focus of this study. Medicaid HCBS 1915(c) waiver applications were obtained from the CMS Medicaid.gov website over a period of 11 months (May 2015 to April 2016). Our first inclusion criteria required that waivers were 1915(c) (i.e., 1115 and 1915(b) waivers were excluded). Waivers were next required to serve only people with IDD which include developmental disabilities (DD), intellectual disabilities (ID), and/or autism spectrum disorders (ASD). Waivers for all other populations (e.g., older adults, HIV/AIDs, physical disability), as well as waivers that were pending or inactive, were excluded. No age limitations were imposed – we examined waivers that provided services for both children (0 to 18) and adults (18+). Our final inclusion criteria required waivers to include 2015, the latest comprehensive data available at the time of the

study. While this was most often the state FY (July 1, 2014 to June 30, 2015), a number of states used the federal FY (October 1, 2014 to September 30, 2015) or the 2015 calendar year (January 1, 2015 to December 31, 2015). We use the term FY for consistency. This methodology resulted in a population of 111 HCBS 1915(c) waivers for people with IDD from 46 states and the District of Columbia.

Use of Restraint, Restrictive Interventions, and Seclusion

Within waivers' "Appendix G: Participant Safeguards" section "Appendix G-2: Safeguards Concerning Restraints and Restrictive Interventions", states detail if the waiver permits the use of restraint, restrictive interventions, and/or seclusion. In sub-section "a. Use of Restraints" states note if the waiver prohibits or permits the use of restraints, sub-section "b. Use of Restrictive Interventions" restrictive interventions, and sub-section "c. Use of Seclusion" seclusion. This information was utilized to classify which waivers allowed restraint, restrictive interventions, and/or seclusion (Yes (1), No (0)). (These procedures would not be permitted if the state prohibits their use; if the state permitted use but the waiver prohibited it, these procedures would be prohibited for waiver participants). Descriptive statistics were used to examine characteristics across waivers and states that allowed restraint, restrictive interventions, and/or seclusion.

Group Differences

We also then utilized descriptive statistics to determine if there were differences in the use of restraint, restrictive interventions, and seclusion depending on the target populations that the waivers served. This included the target age (children; adults; or both children and adults) and target group (DD umbrella (including DD, ID, and ASD); ID only; or ASD only) the waivers served.

Relationships with Mental Health Spending

Since a major argument for these procedures is that they address serious aggressive behavior (Luiselli, 2009), we also wanted to explore if there was a relationship between these procedures and waiver provision of mental/behavioral health services – behavioral therapy services or crisis services. We theorized that states that had higher projected spending on these mental/behavioral health services would permit restraint, restrictive interventions, and seclusion less often because they would have better mental health infrastructure in place. Therefore, we used descriptive statistics to explore waiver provision of behavioral therapy services or crisis services (projected spending per participant to control for waiver and population size) from Rizzolo et al.'s (2013) IDD waiver taxonomy, and the provision of restraint, restrictive interventions, and seclusion. Behavioral therapy services were defined as those services "provided to individuals with emotional, behavioral, or mental health issues that result in functional impairments and which may interfere with community living" (Friedman, Lulinski, & Rizzolo, 2015, p. 261). Crisis services were those "designed to aid immediately in crisis situations. The services aimed at a crisis often noted that the goal was prevention of the individual being placed in a more restrictive institutionalized setting" (Friedman et al., 2015, p. 262).

Safeguards: Qualitative Characteristics

If they permit restraints, CMS also requires states "specify the safeguards that the State has established concerning the use of each type of restraint (i.e., personal restraints, drugs used as restraints, mechanical restraints)" (Centers for Medicare and Medicaid, n.d., p. 88). Those waivers that permit restrictive interventions must:

> Specify the safeguards that the State has in effect concerning the use of interventions that restrict participant movement, participant access to other individuals, locations or activities, restrict participant rights or employ aversive methods (not including restraints or seclusion) to modify behavior. (Centers for Medicare and Medicaid, n.d., p. 89)

Those waivers permitting seclusion must also specify the safeguards concerning each type of seclusion (Centers for Medicare and Medicaid, n.d.). These descriptions of safeguards concerning use were qualitatively analyzed using content analysis (Patton, 2002) to determine exactly which types of restraints, restrictive interventions, and seclusions states were permitting, and major and minor themes within each of the three categories. When interpreting these characteristics, it should be noted that our description of these themes only includes when states purposely noted these items; in these instances, it is not clear if an absence of a description means states do not permit/prohibit the item, or if the state simply did not go into detail (Friedman & Rizzolo, 2016). For example, the majority of waivers noted staff must be trained before implementing a restraint. It is likely all states have this requirement although not all of the waivers noted this in their description.

The safeguard characteristics were then quantified for each of the waivers (Yes (1), No (0)), which is a common technique to triangulate data sources (Bernard, 1996; Chi, 1997; Fielding, 2012; Jick, 1979; Sandelowski, Voils, & Knafl, 2009; Ward, 2007; Young, 1981) – "allowing numbers to 'speak' in order to enhance our understandings of data" (Ward, 2007, p. 10). Doing so allowed us to examine characteristics across waiver groups, particularly target ages and target populations, using descriptive statistics.

Findings

The overwhelming majority of HCBS 1915(c) waivers allowed restraint and restrictive interventions to be used on people with IDD in FY 2015. Restraint of people with IDD was allowed by 78.4% of waivers (*n* = 87); restrictive interventions were permitted by 75.7% of waivers (*n* = 84) in FY 2015. A much smaller proportion of waivers (24.3% of waivers (*n* = 27)) allowed seclusion to be used on people with IDD. Table 2 details the use of restraint, restrictive interventions, and seclusion by waiver.

Qualitative Characteristics

Restraint. Within waivers' descriptions of restraint, there were three types of restraints allowed: manual restraints; chemical restraints; and, mechanical restraints. Table 2 details characteristics, including the percent of each target category that permitted those features. Manual restraints, also referred to as physical restraints, were defined as a manual method of holding a person that restricts body movements or access to the body; all of the waivers that allowed restraint allowed manual restraint (see Table 3). Chemical restraint was often described as:

> the use of behavior-modifying drugs prescribed and administered only in the situation of imminent threat of serious physical harm to prevent a participant from injuring self or others …The administration of medication for chemical restraint must be ordered by a physician and the order must include specific instructions for when it may be used…If it is used, the consumer cannot be left alone after administration and the affects (*sic*) must be monitored and documented, including intended and unintended effects, side effects, breathing, consciousness, and

> allergic or other adverse reactions. (Missouri's DD Comprehensive Waiver (MO178.R05.03))

Mechanical restraints are mechanical apparatus used to restrict people's movement. Examples included: "arm splints; bed rails; Bergeron safety belt; custom seat belt clips; E-Z-ON Vest with optional crotch straps; E-Z-on buckle guard; geriatric chair; helmets; jumpsuits; mitts; papoose board; safety cuffs; and, waist/lap belt" (Connecticut's Home and Community Supports Waiver for Persons with Autism (CT993.R00.00)).

Restrictive interventions. Waivers allowing restrictive interventions often permitted manual restraints, mechanical restraints, and chemical restraints within those interventions (Table 3). More specifically, restriction of movement, including timeouts and/or prohibiting participants from going outside or inside, was the most frequently mentioned restrictive interventions. Approximately one-quarter of waivers allowing restrictive interventions permitted negative and positive reinforcement techniques, and loss of privileges such as visitors, property, or phone calls. Some waivers also allowed overcorrection, an aversive punishment (Iwata, 1987) where "a participant is compelled to repeat an action repeatedly" (Alaska's People with IDD waiver (AK0260R0404)). Another type of restrictive intervention permitted was enhanced supervision, such as one-to-one staffing. A small number of waivers also allowed reparation of property and restitution (the restoring of the participants' property), and aversive or noxious treatment; an aversive device is:

> [A]n instrument used to administer an electrical shock or other noxious stimulus to an individual to modify undesirable behaviors... Aversive procedure means the contingent use of an event which may be unpleasant, noxious or otherwise cause

> discomfort to alter the occurrence of a specific behavior. (Connecticut's CT0993R0000 waiver)

Only two waivers allowed device tracking, and two allowed the modification of clothing.

Another characteristic was for waivers to specify which restrictive interventions were strictly prohibited. Approximately half of the waivers that permitted restrictive interventions prohibited aversive or noxious stimuli such as electric shock. Many waivers also noted prohibiting cruel and corporal punishments; examples of these punishments included,

> subjecting participants to discipline that is out of proportion to the particular inappropriate behavior or is more than 24 hours after the provider learned of the behavior; subjecting the participant to verbal abuse, threats, or derogatory remarks; depriving the participant of food, visits or phone calls with family and professionals, clothing (unless otherwise indicated for clinical or safety reasons), sleep, or exercise; assigning exercise; forcing the participant to take an uncomfortable position; assigning strenuous or harsh work or work that is beyond the capacity of the participant; disciplining for toilet accidents; or depriving the participant of educational services. (Illinois Residential Waiver for Children and Young Adults with DD (IL0473R0103))

A proportion of waivers also prohibited the use of locked-door time-out. Contrary to the waivers mentioned above which allowed overcorrection, a small number noted prohibiting the use of overcorrection. Bitter liquids or spray mists were also prohibited by a fraction of waivers.

Seclusion. The majority of waivers that permitted seclusion of people with IDD did not provide comprehensive details about requirements regarding seclusion. However, some waivers required the room *not* be locked, while others mentioned the seclusion

room *should* be locked or contained. Other requirements for seclusion rooms included sufficient lighting, sufficient ventilation, room to lie down comfortably, and being comforted/held by staff. See Table 3.

Other Characteristics. Other characteristics among descriptions of safeguards included the requirement that staff be trained on implementation of restraints (93.1% of restraint waivers, $n = 81$) restrictive interventions (96.4% of intervention waivers, $n = 81$) and, seclusion (55.6% of seclusion waivers, $n = 15$).

Group Differences

Descriptive statistics revealed waivers for both children and adults (84.4%), and waivers for children only (85%) allowed restraint more often than waivers for adults only (59.3%) (Table 3). Waivers for both children and adults (84.8%) also allowed restrictive interventions more than waivers for children only (75.0%) and adults only (55.6%). Moreover, waivers for adults only (3.7%) were less likely to allow seclusion than waivers for both children and adults (31.3%) or waivers for children (30.0%). Despite differences across all three age groups, within each group waivers were more likely to allow restraints and restrictive interventions than they were seclusion.

There were also differences across target populations. DD umbrella waivers allowed restraints more often (83.7%) than waivers for people with ID only (64.3%) or ASD only (54.5%). A similar characteristic was also present within restrictive interventions, with ASD waivers (45.5%) being least likely to permit restrictive interventions compared to ID only waivers (64.3%), or DD umbrella waivers (81.4%). Finally, DD umbrella waivers (29.1%) permitted seclusion most often when compared to ID only (0.0%) or ASD only (18.2%) waivers. In fact, no ID only waivers permitted seclusion. See Table 3.

Relationships with Mental Health Spending

According to descriptive statistics, waivers that permitted restraint projected a lower average spending per participant on behavioral health services (*M* = $1,021, *SD* = $2,437) than waivers that prohibited restraint (*M* = $2,206, *SD* = $6,782) (Table 4). Similarly, waivers that allowed restraint also projected spending less for the average participant on crisis services (*M* = $90.38, *SD* = $309.36) than waivers that prohibited restraint (*M* = $190.88, *SD* = $874.77).

Waivers that permitted restrictive interventions projected spending less per participant on behavioral health services (*M* = $1,029, *SD* = $2,468) than those waivers that prohibited restrictive interventions (*M* = $2,050, *SD* = $6,411). Waivers that allowed restrictive interventions also projected less on crisis services (*M* = $93.50, *SD* = $314.44) than waivers that did not permit restrictive interventions (*M* = $170.00, *SD* = $824.95).

Moreover, waivers permitting seclusion projected spending less per participant on behavioral health services (*M* = $874, *SD* = $2,041) than waivers that did not allow seclusion (*M* = $1,407, *SD* = $4,225). Waivers that allowed seclusion also projected spending less on average per participant on crisis services (*M* = $34.61, *SD* = $116.62) than waivers that prohibited the use of seclusion (*M* = $137.02, *SD* = $553.78).

Discussion

Although restraint, restrictive interventions, and seclusion continue to be used on people with IDD, research has indicated that these techniques can pose a serious threat to the health and safety of people with IDD (Government Accountability Office, 1999). Because of their prominence and the potential threat they impose, this study sought to determine the extent to which HCBS 1915(c) waivers, the largest provider of LTSS for people with IDD, across the nation permitted the use of restraint, restrictive interventions, and seclusion. Our study found that

over 75% of HCBS waivers permitted restraint and restrictive interventions to be used on people with IDD in FY 2015, while a smaller proportion permitted the use of seclusion.

Of the waivers that permitted the use of restraint and restrictive measures, manual restraint was almost always permitted, and chemical and mechanical restraints were permitted nearly 70% of the time. Despite the widespread use of restraint and restrictive interventions, literature indicates that the use of these techniques may be harmful to both the person on which the intervention is applied and the person applying the intervention (Evans et al., 2003; Ferleger, 2008; Fisher, 1994; Government Accountability Office, 1999; Mohr et al., 2003; Rakhmatullina et al., 2013; Tilli & Spreat, 2009).

Additionally, waivers that targeted adults only allowed restraints, restrictive interventions, and seclusion less often than waivers that targeted both children and adults, or children only. More research is needed to determine why waivers for children with IDD in particular allowed restraints, restrictive interventions, and seclusion as much or more than waivers for adults, or both children and adults as it seem counterintuitive given the harmfulness of these techniques. Perhaps these findings are related to the fact that there are a smaller number of waivers for children only (n = 27, 24.3%). Future research should explore states' reasons behind these decisions.

Waivers that targeted people with ASD allowed restraints and restrictive interventions less often compared to waivers that served the umbrella population of people with DD, and ID only waivers. Waivers that served the umbrella population of people with DD permitted seclusion more often than those that only served people with ID or ASD. While the finding that waivers for people with ASD permit restraints and restrictive interventions less often is surprising given the history of aversive treatments for people with ASD (Lichstein &

Schreibman, 1976), ASD waivers projected more spending on the average participant for behavioral health services (although not crisis services) than DD umbrella or ID only waivers, suggesting states are utilizing alternative treatment methods in lieu of these techniques.

While the majority of waivers permitted restraint, restrictive interventions, and seclusion, many particular practices were *specifically prohibited*, such as electric shock and other noxious stimuli, corporal punishment, and time-outs that included locking doors. These specific prohibitions convey an understanding of the ethical and physical implications of using particular types of restrictive interventions, arguably interventions that are the most frowned upon, especially with the United States' history of administering such treatments to individuals with psychiatric disabilities and/or IDD (Geller, 2006). Similarly, a small number of waivers required safeguards when implementing seclusion, such as not locking the door, sufficient air flow, and lighting.

Our findings also revealed relationships between provision of mental/behavioral health services, particularly behavioral therapy services and crisis services, and permittance of restraint, restrictive interventions, or seclusion. Waivers that permitted restraint, restrictive interventions, and/or seclusion all projected spending less per participant on behavioral health and crisis services than waivers that did not permit these techniques. More research is needed to determine the directionality of this relationship – if states' provision of mental health services results in less need for interventions, *or* if a lack of interventions resulted in the need for more mental health services – or if the relationship was bidirectional. In theory, as the claim is these procedures address serious aggressive behavior (Luiselli, 2009), a better mental/behavioral health infrastructure should reduce the need for these aggressive and controversial techniques. While determining if the reduction in intervention techniques frequency is due to a more successful

mental/behavioral health infrastructure is outside the scope of this study, we believe it would be a fruitful avenue for future study. Given these techniques can produce negative outcomes, including serious harm, it is important states take mental/behavioral health services into account when states decide if they shall permit or prohibit restraint, restrictive interventions, or seclusion.

This is especially pertinent as many professional organizations have denounced their use and in turn recommended alternative procedures for people with IDD displaying aggressive behavior. Two of the more prominent research and advocacy organizations on IDD – the American Association on Intellectual and Developmental Disabilities (AAIDD) and the Arc – produced a joint position statement denouncing the use of deprivation, physical restraint, and seclusion and noted that "[t]hese practices are dangerous, dehumanizing, result in a loss of dignity, and are unacceptable in a civilized society" (AAIDD, 2010). Instead, AAIDD and the Arc are proponents of the use of positive behavioral supports (AAIDD, 2010). Positive behavioral supports combine aspects of evidence-based practices such as applied behavior analysis (ABA) to address problematic behavior while working to increase independence, participation, and overall quality of life (Hieneman, 2015). For example, one study found organizational behavior management successfully reduced the use of mechanical restraints of people with IDD by 80% (Williams & Grossett, 2011). The American Psychiatric Nurses Association has also recommend that restraint and seclusion should be used as a last resort for the minimum amount of time necessary and must never be used for staff convenience or to punish individuals for aggressive behavior (American Psychiatric Nurses Association, 2014). In addition, the United States Food and Drug Administration (FDA) (2016) has pushed for a ban on aversive restrictive intervention techniques because "they present an unreasonable and substantiated risk to public health" (n.p.). In doing so, the FDA also proposes positive behavioral

support as an alternative to "curb self-injurious or aggressive behaviors" (United States Food and Drug Administration, 2016, n.p.).

Future research and practice should work to identify other alternative methods that are safer, more effective, and less invasive on personal freedom than restraint, restrictive interventions, and seclusion. Because the majority of states permitted the use of restraint and/or restrictive interventions in their HCBS waivers, it is important to have a plan in place to reduce and eventually eliminate their use quickly and safely. As identified by AAIDD and the ARC, positive behavioral supports are promising in addressing aggressive and problematic behavior. Professionals should work to eliminate the use of restraint, restrictive interventions, and seclusion.

Limitations

When interpreting our findings, one limitation should be considered. Medicaid HCBS waivers are projections made to CMS, rather than actual utilization data. Thus, our findings reveal where restraints, restrictive interventions, and seclusions are permitted rather than when they were actually utilized. However, waiver projections have been found to be a reasonably accurate proxy as they are based on previous years' utilization data (Rizzolo et al., 2013). Moreover, Rizzolo et al.'s (2013) examination of FY 2010 HCBS waivers revealed similar findings to utilization analyses by Braddock et al. (2015). Future studies should examine how restraints, restrictive interventions, and seclusions are implemented in states which permit them in their HCBS waivers.

Another limitation of our qualitative findings is states' description of these characteristics only includes when states purposely noted these items; in these instances, it is not clear if an absence of a description means states do not permit/prohibit the item, or if the state simply did

not go into detail (Friedman & Rizzolo, 2016). Therefore, it is not necessarily clear if these techniques are always considered for emergency purposes only. Given these gaps, future studies should directly survey states to determine exclusion and inclusion criteria.

Conclusion

A study by Lulinski-Norris (2014) found 91% of the people with IDD who returned to state institutions in Illinois did so because of behavioral issues; "this failure suggests an inadequate community capacity to provide necessary intervention for situations in which an individual is experiencing a behavioral crisis" (Friedman et al., 2015, p. 258). Many professionals believe the use of interventions, such as restraint and seclusion, are largely ineffective in treating behavioral issues in people with IDD (Antonacci, Manuel, & Davis, 2008), leading one to question: why do so many HCBS waivers permit their usage?

As they can produce negative outcomes, as well as come with a serious risk of harm and injury, application of these restrictive techniques are intended to be used as a last resort *after* other forms of intervention techniques have been applied; however, our study revealed restraint, restrictive interventions, and seclusion were permitted by an overwhelming majority of states. For this reason, our study also examined the relationship between these techniques and provision of behavioral therapy and crisis services to determine if states were considering these services as preventative or alternative methods to avoid use of restraint, restrictive interventions, and seclusion. Thus, we wanted to know if states that projected more funding for behavioral therapy and/or crisis services had lower allocations of these techniques. Our findings suggest a relationship between a waiver's allocation of behavioral therapy and/or crisis services, and their use of restraint, restrictive interventions, or seclusion. However, problematically, especially given these findings, there is a lack of prioritization of mental/behavioral health services for

people with IDD amongst waivers in general. For example, in FY 2013, only 1.2% of HCBS waiver funding was projected for mental/behavioral health services for people with IDD, including crisis (Friedman et al., 2015). Since these services are aimed at preventing the (re)institutionalization of people with IDD, we would suggest waivers allocate more funding towards behavioral health and crisis services. These services may be crucial to reduce the use of restraint, restrictive interventions, and seclusion, as well as promoting the community integration of people with IDD.

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Table 1
Literature Definitions of Restraint, Restrictive Interventions, and Seclusion

Procedure	Definition
Restraint	Interventions restricting movement; generally falls into three categories: physical, mechanical, and chemical (Busch & Shore, 2000).
Physical	Prevents free movement by applying force to a person's body (Busch & Shore, 2000)
Mechanical	A type of physical restraint but introduces tools such as straps, belts, and helmets to restrict free movement (Busch & Shore, 2000)
Chemical	Chemical restraint uses pharmacological means to control a person's behaviors and movement outside of any standard treatment for their psychiatric or medical condition (Department of Health and Human Services, 1999)
Restrictive interventions	"Limit an individual's movement; a person's access to other individuals, locations or activities, or restrict participant rights. Restrictive interventions also include the use of other aversive techniques (not including restraint or seclusion) that are designed to modify a person's behavior." (Disabled and Elderly Health Programs Group et al., 2015, p. 232)
Seclusion	"The involuntary confinement of a person in a room or an area where the person is physically prevented from leaving" (Department of Health and Human Services, 2006, n.p.)

Table 2

Restraint, Restrictive Interventions, and Seclusion by Waiver

State	Waiver	Target population	Target age	Permits restraints	Permits restrictive interventions	Permits seclusion
Alabama	AL0001.R7.00	ID	child & adult	X	X	
Alabama	AL391.R02.01	ID	child & adult	X		
Alaska	AK260.R04.04	ASD, DD, ID	child & adult	X	X	
Arkansas	AR936.00.00	ASD	child			
California	CA336.R03.00	ASD, DD, ID	child & adult			
Colorado	CO.305.R04.00	DD	child	X		
Colorado	CO434.R02.00	ASD	child			
Colorado	CO0007.R07.00	DD	adult	X	X	
Colorado	CO293.R04.00	DD	adult	X	X	
Colorado	CO4180.R04.00	DD	child	X	X	
Connecticut	CT437.R02.01	DD, ID	child & adult	X	X	X
Connecticut	CT426.R02.01	DD, ID	child & adult	X	X	X
Connecticut	CT881.R00.02	DD, ID	child & adult	X	X	X
Connecticut	CT993.R00.00	ASD	child & adult	X	X	X
Connecticut	CT1040.R00.00	ASD	child			
District of Columbia	DC307.R03.01	DD, ID	adult	X	X	
Delaware	DE009.R07.00	ASD, ID	child & adult	X	X	
Florida	FL867.R01.00	ASD, DD, ID	child & adult	X	X	X
Florida	FL40205.R02.00	DD (familial dysautonomia)	child & adult			
Georgia	GA323.R03.02	DD, ID	child & adult	X	X	
Georgia	GA175.R05.01	DD, ID	child & adult	X	X	
Hawaii	HI0013.R06.00	DD, ID	child & adult	X	X	X
Idaho	ID0076.R05.03	ASD, DD, ID	adult	X	X	X
Idaho	ID859.R01.00	ASD, DD, ID	child	X	X	X
Idaho	ID887.R01.00	ASD, DD, ID	child	X	X	X
Illinois	IL473.R01.03	ASD, DD, ID	child	X	X	X
Illinois	IL464.R01.02	ASD, DD, ID	child			
Illinois	IL350.R03.00	ASD, DD, ID	adult	X	X	
Indiana	IN0387R0204	ASD, DD, ID	child & adult	X	X	
Indiana	IN378.R03.01	ASD, DD, ID	child & adult	X	X	
Iowa	IA242.R05.01	ID	child & adult	X	X	X
Kansas	KS224.05.00	ASD, DD, ID	child & adult	X	X	X
Kansas	KS476.R01.02	ASD	child			
Kentucky	KY314.R03.04	DD, ID	child & adult		X	
Kentucky	KY475.R01.00	DD, ID	child & adult		X	
Louisiana	LA401.R02.02	ASD, DD, ID	child & adult	X		
Louisiana	LA361.R03.00	ASD, DD, ID	child	X		
Louisiana	LA453.R02.01	ASD, DD, ID	adult	X		
Louisiana	LA472.R01.00	ASD, DD, ID	child & adult	X		
Maryland	MD0023.R06.00	DD, ID	child & adult	X	X	X

Maryland	MD339.R03.00	ASD	child	X	X	X
Massachussetts	MA40207.R01.02	ASD	child	X		
Massachussetts	MA828.R01.00	ID	adult	X	X	
Massachussetts	MA826.R01.00	ID	adult	X	X	
Massachussetts	MA827.R01.00	ID	adult	X	X	
Maine	ME159.R05.02	ASD, ID	adult	X	X	
Maine	ME467.R01.00	ASD, ID	adult	X	X	
Michigan	MI4119.r05.00	ASD, DD, ID	child		X	
Michigan	MI0167.R05.01	DD	child & adult		X	
Minnesota	MN0061.R06.01	DD, ID	child & adult	X	X	X
Mississippi	MS282.R04.01	ASD, DD, ID	child & adult	X	X	
Missouri	MO698.R01.00	ASD	child	X	X	
Missouri	MO4185.R04.00	DD, ID	child	X	X	
Missouri	MO40190.R03.03	DD	adult			
Missouri	MO178.R05.03	DD, ID	child & adult	X	X	
Missouri	MO404.R02.03	DD, ID	child & adult	X	X	
Missouri	MO841.R01.02	ASD, DD, ID	child & adult	X	X	
Montana	MT208.R05.01	DD, ID	child & adult	X	X	X
Montana	MT1037.R00.01	DD, ID	child & adult	X	X	X
Montana	MT667.R01.01	ASD	child	X	X	
North Dakota	ND842.R00.00	ASD	child			
North Dakota	ND0037.R07.01	DD, ID	child & adult	X	X	
Nebraska	NE394.R02.00	ASD, DD, ID	adult	X	X	
Nebraska	NE396.R02.00	ASD, DD, ID	adult	X	X	
Nebraska	NE4154.R05.01	DD, ID	child	X	X	
Nevada	NV125.R06.00	ID	child & adult	X	X	
New Hampsire	NH53.R05.00	ASD, DD, ID	child & adult	X	X	X
New Hampsire	NH397.R02.00	ASD, DD, ID	child	X	X	X
New Mexico	NM173.R05.03	ASD, DD, ID	child & adult			
New York	NY470.R01.00	ASD, DD, ID	child			
North Carolina	NC662.R01.00	ASD, DD, ID	child & adult	X	X	X
North Carolina	NC663.R01.00	ASD, DD, ID	child & adult	X	X	X
North Carolina	NC423.R02.01	DD, ID	child & adult	X	X	X
Ohio	OH383.R02.03	ASD, DD, ID	child & adult	X	X	X
Ohio	OH380.R02.03	DD, ID	child & adult	X	X	X
Ohio	OH877.R00.00	DD, ID	child & adult	X	X	X
Ohio	OH231.R4.01	DD, ID	child & adult	X	X	X
Oklahoma	OK351.R03.02	ID	child	X	X	
Oklahoma	OK343.R03.02	ID	adult	X	X	
Oklahoma	OK179.R05.02	ID	child & adult			
Oklahoma	OK399.R02.02	ID	adult			
Oregon	OR117.R05.03	DD, ID	child & adult	X	X	
Oregon	OR375.R03.00	DD, ID	adult			
Oregon	OR40194.R03.00	DD, ID	child			
Pennsylvania	PA593.R01.04	ASD	adult	X	X	
Pennsylvania	PA354.R03.04	ID	child & adult	X	X	
Pennsylvania	PA147.R05.04	ID	child & adult	X	X	

Pennsylvania	PA235.R04.05	DD	adult			
Pennsylvania	PA0324.R03.00	DD, ID	child			
South Carolina	SC676.R01.01	ID	child & adult	X	X	
South Dakota	SD44.R07.01	DD, ID	child & adult	X	X	
South Dakota	SD338.R03.00	DD, ID	child & adult			
Tennessee	TN427.R02.01	DD, ID	child & adult	X	X	
Tennessee	TN357.R03.00	ID	child & adult	X	X	
Tennessee	TN128.R05.00	DD, ID	child & adult	X	X	
Texas	TX110.R06.06	DD, ID	child & adult	X	X	
Texas	TX281.R04.02	DD	child & adult	X	X	
Texas	TX221.R05.00	DD	child & adult			
Texas	TX403.R02.03	DD, ID	child & adult	X	X	
Utah	UT158.R05.04	ASD, DD, ID	child & adult	X	X	
Virginia	VA358.R03.03	ASD, DD	child & adult			
Virginia	VA430.R02.00	ID	child & adult	X	X	
Virginia	VA372.R03.02	ID	child & adult	X	X	
Washington	WA40669.R01.03	DD	child	X	X	
Washington	WA411.R02.04	DD	adult	X	X	
Washington	WA0410.R02.06	DD	child & adult	X	X	
Washington	WA0409.R02.06	DD	child & adult	X	X	
Wisconsin	WI414.R02.01	ASD, DD, ID	child	X	X	X
Wyoming	WY253.R04.02	DD, ID	child	X	X	
Wyoming	WY1061.R00.00	DD, ID	child & adult	X	X	
West Virginia	WV133.R05.01	DD, ID	child & adult	X	X	

Note. ID = intellectual disability; DD = developmental disabilities; ASD = autism spectrum disorder.

Table 3

Use of Restraint, Restrictive Intervention, and Seclusion by Waiver Target Group

			Target age						Target population					
	All waivers (*n* = 111)		Both (*n* = 64)		Adults (*n* = 27)		Children (*n* = 20)		DD umbrella (*n* = 86)		ID (*n* = 14)		ASD (*n* = 11)	
	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*
Restraints (n = 87)	78.4%	87	84.4%	54	59.3%	16	85.0%	17	83.7%	72	64.3%	9	54.5%	6
Manual restraint	78.4%	87	84.4%	54	59.3%	16	85.0%	17	83.7%	72	64.3%	9	54.5%	6
Chemical restraint	57.7%	64	60.9%	39	55.6%	15	50.0%	10	61.6%	53	57.1%	8	27.3%	3
Mechanical restraint	54.1%	60	59.4%	38	37.0%	10	60.0%	12	57.0%	49	50.0%	7	36.4%	4
Restrictive Interventions (n = 84)	75.7%	84	84.8%	54	55.6%	15	75.0%	15	81.4%	70	64.3%	9	45.5%	5
Manual restraint	73.0%	81	81.3%	52	55.6%	15	75.0%	15	79.1%	68	64.3%	9	45.5%	5
Chemical restraint	54.1%	60	57.8%	37	51.9%	14	50.0%	10	57.0%	49	64.3%	9	27.3%	3
Mechanical restraint	55.9%	62	65.6%	42	33.3%	9	60.0%	12	59.3%	51	57.1%	8	36.4%	4
Restriction of movement	57.7%	64	62.5%	40	48.1%	13	60.0%	12	66.3%	57	28.6%	4	36.4%	4
Reinforcement	20.7%	23	17.2%	11	29.6%	8	20.0%	4	23.3%	20	21.4%	3	0.0%	0
Loss of privileges	18.0%	20	18.8%	12	11.1%	3	25.0%	5	20.9%	18	7.1%	1	9.1%	1
Overcorrection	8.1%	9	10.9%	7	7.4%	2	0.0%	0	10.5%	9	0.0%	0	0.0%	0
Enhanced supervision	6.3%	7	9.4%	6	3.7%	1	0.0%	0	8.1%	7	0.0%	0	0.0%	0
Reparation or restitution	6.3%	7	6.3%	4	11.1%	3	0.0%	0	8.1%	7	0.0%	0	0.0%	0
Noxious or painful treatment	3.6%	4	3.1%	2	7.4%	2	0.0%	0	4.7%	4	0.0%	0	0.0%	0
Device tracking movement	1.8%	2	3.1%	2	0.0%	0	0.0%	0	1.2%	1	0.0%	0	9.1%	1
Modification of clothing	1.8%	2	3.1%	2	0.0%	0	0.0%	0	2.3%	2	0.0%	0	0.0%	0
Prohibits														
Noxious stimuli	32.4%	36	34.4%	22	22.2%	6	40.0%	8	26.7%	23	57.1%	8	45.5%	5
Corporal punishment	27.0%	30	31.3%	20	14.8%	4	30.0%	6	27.9%	24	28.6%	4	18.2%	2
Locked-door time out	19.8%	22	18.8%	12	22.2%	6	20.0%	4	19.8%	17	28.6%	4	9.1%	1

Overcorrection	10.8%	12	12.5%	8	3.7%	1	15.0%	3	8.1%	7	28.6%	4	9.1%	1
Spray mists or liquids	8.1%	9	9.4%	6	7.4%	2	5.0%	1	9.3%	8	7.1%	1	0.0%	0
Device tracking	0.9%	1	1.6%	1	0.0%	0	0.0%	0	0.0%	0	0.0%	0	9.1%	1
Seclusion (n = 27)	24.3%	27	31.3%	20	3.7%	1	30.0%	6	29.1%	25	0.0%	0	18.2%	2
Must not be locked	4.5%	5	6.3%	4	0.0%	0	5.0%	1	3.5%	3	0.0%	0	18.2%	2
Locked in room	1.8%	2	3.1%	2	0.0%	0	0.0%	0	2.3%	2	0.0%	0	0.0%	0
Sufficient lighting	2.7%	3	4.7%	3	0.0%	0	0.0%	0	3.5%	3	0.0%	0	0.0%	0
Sufficient ventilation	2.7%	3	4.7%	3	0.0%	0	0.0%	0	3.5%	3	0.0%	0	0.0%	0
Can lie down comfortably	0.9%	1	1.6%	1	0.0%	0	0.0%	0	1.2%	1	0.0%	0	0.0%	0
May be held by staff	0.9%	1	1.6%	1	0.0%	0	0.0%	0	1.2%	1	0.0%	0	0.0%	0

Note. Percentages represent the *n* in that category divided by the column total listed in the heading.

Table 4

Mental Health Services' Projected Spending by Intervention Type

Projected spending per participant	Restraint		Restrictive interventions		Seclusion	
	No	Yes	No	Yes	No	Yes
Behavioral health						
M	$2,206.47	$1,021.16	$2,049.70	$1,029.22	$1,407.18	$873.83
SD	$6,782.39	$2,437.27	$6,410.72	$2,467.87	$4,224.54	$2,040.19
Min	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Max	$32,392.50	$18,077.63	$32,392.53	$18,077.63	$32,392.53	$8,529.00
Crisis						
M	$190.88	$90.38	$170.00	$93.50	$137.02	$34.61
SD	$874.77	$309.36	$824.95	$314.44	$553.78	$116.62
Min	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Max	$4,292.76	$2,329.27	$4,292.76	$2,329.27	$4,292.76	$572.83