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Implementing a Program to Reduce Restraint and Seclusion Utilization in a Public-Sector Hospital: Clinical Innovations, Preliminary Findings, and Lessons Learned

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The Alternative to Restraint and Seclusion State Incentive Grant was a national initiative to reduce restraint and seclusion use in psychiatric hospitals and community based mental health settings sponsored by the National Association of State Mental Health Program Directors. This initiative was implemented in a large public sector psychiatric hospital. It involved the use of a restraint and seclusion prevention project team and a Patient-Staff Steering Committee collaborating on violence prevention. It also entailed systematic data collection and case reviews, staff-training on trauma-sensitive care and other relevant topics, employee recognition, as well as the use of specific restraint prevention tools including sensory modulation, positive behavioral support plans, comfort rooms, Wellness Recovery Action Plans, modified restraint orders, and new debriefing protocols. Compared with a 4-year baseline period, a 4-year implementation phase showed a reduction in annual restraints hours by 89%, annual staff injuries by 18%, and annual Workmen's Compensation medical costs by 24%. The findings illustrate the value of implementing systemic evidence-based practices to reduce restraint use, enhance the quality of care in tertiary care settings, and promote a new, patient-centered and recovery-oriented institutional culture.

Impact Statement
This article describes the implementation of a systematic plan to reduce the use of restraint in a large public psychiatric hospital. Efforts over an eight-year period resulted in a reduction in the use of restraints by 89%, demonstrating the feasibility of improving patient care by reducing restraint use, while also reducing hospital expenditures and staff injuries.

Keywords: restraints, seclusion, assaultiveness

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Most individuals with serious psychiatric disabilities engage in little or no lifetime violence, yet a subgroup of this population engages in violent behavior under certain circumstances (Douglas, Guy, & Hart, 2009). The use of mechanical restraint has been one method traditionally employed in inpatient settings in the U.S. and elsewhere to contain patient violence (Lepping, Masood, Flammer, & Noorthoorn, 2016). Reducing incidents of violence resulting in restraint episodes has become an important goal for inpatient facilities (Ashcraft & Anthony, 2008; Luiselli, 2009; Smith et al., 2005; Substance Abuse & Mental Health Services Administration, 2006). This is motivated by the high psychological cost to patients, the inconsistency between restraint use and the principles of patient-centered care (Mevissen & de Jongh, 2010; Steinert, Birk, Flammer, & Bergk, 2013; Waldemar, Arnfred, Petersen, & Korsbek, 2016; Weiss, 1998), the lack of effectiveness in the overall management of patient violence (Finke, 2001; Fisher, 1994; Jones & Timbers, 2002; Martinez, Grimm, & Adamson, 1999), the associated risk of injury to staff and patients, including patient deaths (Forster, Cavness, & Phelps, 1999; Weiss, 1998),

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and the high cost to psychiatric staff and institutions (Frueh et al., 2005; LeBel & Goldstein, 2005).

Leaders in the field of patient-centered care have echoed the call of the National Association of State Mental Health Program Directors National Technical Assistance Center for State Mental Health Planning (2005) for the elimination of coercive interventions in the care of individuals with severe psychiatric disabilities (Ashcraft & Anthony, 2008). This position has been endorsed by regulatory agencies such as the Centers for Medicare and Medicaid Services (CMS) and The Joint Commission (TJC). A professional consensus has now emerged that restraint use is not an empirically supported intervention to address patient violence (Finke, 2001). In addition, the use of restraint is hazardous to psychiatric technicians and has negative fiscal consequences (Carmel & Hunter, 1989; Longton, 2015).

Further, utilization of restraint runs counter to the tenets of the recovery movement and the principles espoused by various advocacy groups that encourage mental health service users' autonomy and participation in their care, as well as increased emphasis on enhancing their dignity and respect and partnership with their treatment teams to bolster recovery (Davidson, Rakfeldt, & Strauss, 2010). The experience of being physically restrained is often traumatic for the individual who is restrained (Chieze, Hurst, Kaiser, & Sentissi, 2019; Substance Abuse & Mental Health Services Administration, 2019). It may symbolically represent a repetition of earlier traumas, and in fact be paradoxically sought out by the individual in an attempt to gain mastery over the original traumatic events (van der Kolk, 1989), a dynamic that creates toxic cycles of interactions between patients and staff that can be difficult to interrupt (Gallegos & Hillbrand, 2016.)

Reviews of empirical articles examining the efficacy of programs aiming to reduce the use of restraint and seclusion in hospital settings reveal half a dozen key factors that have documented empirical support (Huckshorn, 2006; Scanlan, 2010). They include change in policy or leadership, external review or debriefing, use of data to inform practice, staff training, consumer/patient and family involvement, increase in staff-to-patient ratio, use of crisis response teams, and changes in program elements, in particular use of violence prevention tools.

In October 2007, the State Mental Health Authority of Connecticut earned a competitive grant from the National Association of State Mental Health Program Directors (NASMHPD) to participate in their Alternatives to Restraint and Seclusion State Incentive Grant (ARS-SIG), a national initiative to reduce restraint and seclusion use. Prior research on the ARS-SIG initiative had demonstrated effectiveness at decreasing the use of restraint and seclusion in small and medium sized public hospitals (Center for Mental Health Services, 2004; National Association of State Mental Health Program Directors, 2005). The present report provides a description of the implementation of 11 clinical innovations derived from the ARS-SIG initiative at a large public-sector psychiatric hospital with special focus on the impact of the initiative on utilization of restraint and seclusion, staff injuries, and Workmen's Compensation claims costs related to staff injuries.

Method

Study Setting

Connecticut Valley Hospital (CVH) is a 615-bed public sector psychiatric hospital of the State of Connecticut comprised at the time of the study of 27 units within three divisions, forensic, addictions, and general psychiatry. Prior to the ARS-SIG implementation, the hospital had introduced a number of initiatives to reduce mechanical restraint use (described under Trends section below). Although these initiatives all resulted in reduced use of restraint, their beneficial effects were neither hospital-wide nor consistently sustained. The ARS-SIG approach offered the prospect of applicability across all 27 units of the hospital and a methodology to track progress. It required locally tailored implementation of six core strategies (hereafter referred to as principles). A description of these principles and of the hospital's interventions based thereupon follows.

Study Design

Eleven clinical innovations were introduced and implemented in the hospital over a 4-year period (from 2009 to 2012). We assessed the impact of these changes on the use of restraint using a quasi-experimental design that entails a 4-year baseline phase (2005–2008) and a 4-year intervention phase (2009 to 2012). Because of day-to-day fluctuations in hospital census, we chose as the dependent variable *total patient-restraint hours per 100 patient days*, the commonly used metric. Restraint hour data were collected in real time during the baseline and intervention phases using the hospital Risk Management And Notification System (RMANS). Recognizing the normal year-to-year variations in restraints hours, we chose a 4-year baseline period, and compared it with the 4-year intervention phase.

A multilayered committee structure was created to guide the implementation process at various levels. These include: (a) a statewide steering committee comprising of leadership of the hospital, state department of mental health leadership and research division, patients, advocacy groups, the hospital Director of Recovery and Consumer Affairs and the Chief of Nursing, who also acted as liaison; (b) the pilot unit steering committee; and (c) the Hospital Advisory Committee.

Innovations and Preliminary Findings

Clinical Innovations

Eleven clinical innovations were derived from the ARS-SIG approach based on the 6 principles entailed in the ARS-SIG Core Strategies. A brief description of these novel practices follows. A more detailed description will be posted on the Connecticut Department of Mental Health and Addiction Services website (DMHAS; https://portal.ct.gov/dmhas).

Principle 1: Leadership Toward Organizational Change

Restraint and seclusion prevention project team. The hospital unit with the highest utilization of restraint at the time of

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project initiation was selected as the site for a pilot project aimed at restraint and seclusion reduction. The project team established a steering committee to provide the needed infrastructure to lead the culture change for patient safety. It began to meet in late 2008, and consisted of the cochairs (the Chief of Nursing and the Director of Recovery and Consumer Affairs), a senior psychologist, a performance improvement manager (PI manager), a medical director, a unit manager, a head nurse, and mental health assistants from all shifts, as well as several patients (up to six at a time), most of whom had been subjected to the experience of restraint in the past. The steering committee met weekly with patients and staff to review episodes and trends in restraint and seclusion use from the prior week, quality of life issues, and other needs of the unit.

Early interventions implemented by the steering committee included: census reduction, increased consistency of nursing staffing, and renaming of the unit from *Intensive Treatment Unit* to *Partners for Recovery*. The PI manager began to create weekly reports to communicate unit level restraint and seclusion data to the steering committee. These reports included the number and length of restraint incidents, day of the week and time of day, and graphs to chart progress. Patients and staff discussed both challenging experiences and the successful avoidance of incidents. This fostered an open if occasionally difficult dialogue between them as to how best to manage circumstances that lead to restraint or seclusion use.

Early observation of improved patient–staff interaction, empowerment of patients and active involvement in their treatment encouraged prompt dissemination of the ARS-SIG interventions across the entire hospital. A Hospital Advisory Committee was subsequently established to guide ARS-SIG intervention implementation hospital wide, as well as a hospital wide Restraint and Seclusion Prevention Project Team.

Case review mechanisms. A multitiered process was set up to review the treatment of individuals who had been in restraint or seclusion. Any individual continuously in restraint or seclusion for more than 60 min was interviewed by a nursing supervisor to assess the need for continued restraint/seclusion use, and to identify additional supports needed to assist to transition the patient out of restraint or seclusion as soon as possible. Each episode triggered the need to complete a Focused Treatment Plan Review (FTPR) by the clinical team within 24 hr of the episode, in order to identify any unmet needs the individual may have and to determine the need for a Behavioral Support Plan. The FTPR identified and documented the predisposing, precipitating, and perpetuating factors for violence (3Ps; United Kingdom Department of Health, 2007; United Kingdom National Collaborating Centre for Mental Health, 2015) along with matched interventions to address these factors.

The second tier of review focused on patients whose use of restraint or seclusion reached various predetermined thresholds. The treatment of these patients was reviewed by the clinical management staff of a given division of the hospital, and later, if restraint or seclusion use persisted, by senior management officers of the hospital. These reviews were in the context of multidisciplinary case conferences involving the clinical team treating the individual, the discipline chiefs and the medical director. Patients with particularly challenging treatment issues were presented to the medical director of the Connecticut Department of Mental Health and Addiction Services (DMHAS) for determination of additional resources to manage the patient's risk of violence, for example, to hire a national expert as a case consultant.

Special attention was given to recently admitted individuals, with the expectation that conducting more thorough assessments and developing better treatment plans at the outset could prevent violence and decrease need for restraint or seclusion. The hospital hired one psychologist for each 20- to 25-bed unit who was tasked with assessing each patient for the need for behavioral treatment. Individuals presenting with particularly challenging behaviors were referred to the newly created Behavioral Intervention Service (BIS; Tolisano, Sondik, & Dike, 2017; also, see section on BIS below).

Principle 2: Workforce Development

Training. All hospital clinical staff attended a 3-hr training program on trauma-sensitive care. In addition, all staff received training on sensory modulation techniques. On the pilot unit, several patients presented their experience of being in restraint in order to enlighten staff about the lived experience of being restrained. The hospital developed a trauma curriculum to provide basic information about trauma and trauma-informed care to staff and patients. Hospital leaders, staff and selected patients attended training from national experts on creating a trauma-informed care model at the unit and hospital levels. A web-based training program was developed, which was available to leaders and staff. An expert on sensory modulation in mental health settings provided a training seminar and subsequent on-site consultations.

Additionally, some staff members received Wellness Recovery Action Plan (WRAP) training. The WRAP curriculum focuses on promoting wellness and recovery through support, hope, wellness tools, and the development of an individualized WRAP (Fukui et al., 2011). Also, there was specific training of young adult patients aged 18–25 to empower them to take control of their recovery. Sample topics covered include empathy and cultural awareness, the legislative process, person-centered planning, patient rights, and the Americans With Disabilities Act.

Employee recognition. Restraint-free days, that is, the number of successive days without restraint use, and seclusion-free days were announced on a calendar in each division and posted at strategic locations throughout the hospital so clinical staff could gauge progress, and in the spirit of celebrating accomplishments. Staff was regularly recognized for their hard work in decreasing restraint and seclusion use.

Principle 3: Use of Restraint and Seclusion Prevention Tools

Occupational therapy (OT). OT staff developed a Sensory Modulation Screening Tool. Any patient reaching a predetermined risk management threshold was evaluated for the use of sensory modulation interventions.

Comfort rooms. All units were equipped with a comfort room. These softly lit rooms contain comfortable seating options including a rocking chair, murals, a CD player, a waterfall sound machine, and a panoply of other sensory modulation tools (e.g., squeeze balls). Patients experiencing distress were encouraged to use the room at any time to assist them in managing their symptoms and behavior, thereby preventing a situation that may result in the use of restraint or seclusion.

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Modified physician orders for restraint and seclusion. Physician orders were modified in a variety of ways including decreasing the length of time an individual could be held in restraint or seclusion from three to two hours, and documenting criteria for discontinuation of restraint or seclusion in concrete behavioral terms. Both nursing and medical staff documented on the restraint and seclusion order form the predisposing, precipitating, and perpetuating factors that increase the specific individual's risk of violence, and thus the likelihood of being placed in restraints or seclusion. If restraint or seclusion were used, all interventions attempted *before* the placement in restraint or seclusion were listed in the order in which they were attempted, along with the patient's response to each. Staff noted whether the interventions employed were from the individual's previously identified Personal Safety Preference form. If interventions on the individual's Personal Safety Preference form were considered but not utilized, this was documented, along with the rationale for not utilizing them.

Behavioral Intervention Service. The hospital established a Behavioral Intervention Service (BIS) to provide behavioral consultation across the hospital on all individuals who engaged in extremes of such behaviors as interpersonal violence, self-injury, suicidal behaviors, and problem sexual behaviors (Gallegos & Hillbrand, 2016; Tolisano et al., 2017). It was staffed by two full-time senior psychologists with advanced training in applied behavior analysis and positive behavioral support planning, assisted by two full-time master's level developmental specialists. The hospital also hired one psychologist for each unit, tasked with assessing each patient on admission and as needed for utilization of behavioral treatment interventions. Individuals presenting more challenging behaviors, for example, recurring assaultive behavior, were referred to the BIS.

Principle 4: Use of Data to Inform Practice

This principle refers to systematic monitoring of all innovations and their impact. The Hospital Advisory Committee, whose members include the Chief of Nursing, the Director of Recovery and Consumer Affairs, the hospital CEO, leadership of the three hospital divisions, patients, and representatives from occupational therapy, met monthly to review hospital data. The hospital Restraint and Seclusion Prevention Project Team reviewed and analyzed hospital, unit, and individual patient data. The team met monthly to discuss individuals with high utilization of restraint or seclusion, revise behavioral and treatment plans where appropriate, and develop hospital performance initiatives aimed at prevention. The committee reported directly to the hospital CEO and the weekly hospital operations meetings. Leaders from the three hospital divisions reported on trends within their respective divisions, while a Performance Improvement Manager presented aggregated data from across the hospital. Surveys and semistructured interviews were obtained of staff, patients, and hospital leadership aimed at generating policy feedback between project managers, hospital leaders, hospital staff, and patients.

Numerous tools were developed to monitor progress on multiple fronts, such as a protocol for monitoring patients reaching restraint thresholds, a Restraint Monitoring Tool, a Positive Behavioral Support Plan Monitoring Tool, and others. Reliability of these various tools was established through a variety of means, for example, by discipline chiefs rerating 5% of records. Hospital goals were set using monitored variables, for example, *decrease* restraints *hours by 10% in 6 months*. Weekly data of restraint and seclusion utilization was posted on units and examined in detail hospital wide. Data presentations were used to inform decisions, and "drill-down" analyses were conducted leading to targeted reduction strategies, for example, restraint and seclusion utilization during the holidays and on different shifts.

Principle 5: Consumer Roles in Inpatient Settings

This principle refers to eliciting patient participation. To enhance and support patients' participation in their treatment plan, the Director of Recovery and Consumer Affairs and selected patients collaboratively developed the *Participating Effectively in Your Treatment Plan* curriculum (Howe & Hillbrand, 2017) and began training patients on the units. Patients acquired knowledge on setting treatment planning goals, staff roles, and patient rights. They also learned how to recognize and incorporate their strengths, and how to overcome barriers to success. Patients were also invited to participate in committee meetings at the unit, hospital, and state-wide level. Their participation and voice led to changes in unit rules, selected items for the comfort rooms, shaped staff orientation and training, and informed the overall process.

Principle 6: Debriefing Techniques

This principle refers to the creation of new debriefing protocols. A newly designed debriefing process was introduced following all incidents of restraint and seclusion. The new debriefing protocol incorporated broad input of patients into the process. Data from these debriefings were analyzed to identify themes among precursors of violence in order to develop preventive strategies. The patient debriefing form was revised to be more patient-centered in terms of language and alternative approaches to de-escalation both staff and patient might have employed. Patients' personal preferences in terms of what helps versus what aggravates a situation when an individual is agitated or dysregulated was added to both the Nursing Admission Assessment and Annual Nursing Assessment. Staff was asked to use items on a patient's personal preference list during de-escalation and to document outcome or explain why they were not used.

Obstacles to Implementation

Implementing the aforementioned changes in institutional practices was occasionally challenging and encountered a number of obstacles, including reluctance of staff to participate. In general, the objections to these new practices took the form of hospital staff feeling burdened by new responsibilities and disempowered at the expense of patients who were perceived as having "too much power." For instance, staff was lukewarm initially about meeting weekly on the pilot unit to discuss unit matters and, in particular, incidents of violence and the use of restraint. It proved very useful for the Chief of Nursing, the highest-ranking nursing official in the hospital, the Director of Recovery and Consumer Affairs, and a cadre of senior clinical administrators to run jointly each of these meetings. This conveyed to staff the value that the hospital leadership placed on this new process. Staff resistance decreased as it

became clearer the model was working. Over time, staff came to appreciate the intrinsic value of the meetings where staff and patients alike could air their concerns that could then be addressed promptly and effectively. The use of minutes taken by a clerical staff member or administrative assistant proved valuable not only as a symbol of patient empowerment, but also as a tool to track progress on various issues raised in earlier weeks. After a few months of these meetings, unit staff reluctance about this new process faded, and it became the new norm.

Quantitative Findings

Several indices of patient violence diminished over the course of the study period as described in Table 1 and Table 2. Table 1 provides the comparison in restraint hours, staff injuries, and workmen's compensation medical costs across the baseline period (2005–2008) and the study period (2009–2012). Workmen's compensation medical costs were used to estimate cost of staff injuries related to restraint and seclusion use. Table 2 provides the comparison in mean annual restraint hours, staff injuries, and workmen's compensation medical costs between the baseline period (2005–2008) and the study period (2009–2012). Although the limited number of observations limits the validity of statistical analyses, they are provided for illustrative purpose and to estimate effect sizes. Mean annual restraint hours decreased between the baseline period (2005–2008) and study period (2009–2012) from 5,300 hr to 570 hr, a 89% decrease ($t = -10.54$, $p < .01$, $d = 5.27$). The mean annual staff injuries decreased from 225 injuries to 184, an 18% decrease ($t = -6.61$, $p < .01$, $d = 3.31$). The mean annual workmen's compensation medical costs decreased from $780,937 to $527,715, a 24% decrease ($t = -4.11$, $p < .01$, $d = 1.45$). All effect sizes are large. A cursory examination of total seclusion hours by year reveals no concomitant increase of seclusion accompanying the observed decreases in restraints hours. During the baseline phase, mean annual seclusion hours were 327 hr. During the study period, it was 232 hr, a 29% decrease.

Trends

To understand trends in the data, it is necessary to examine the historic context of the present investigation. Prior to the study period, the hospital embarked on a number of educational and training initiatives including social and independent living skills training for psychosocial rehabilitation—the Lieberman model (Liberman et al., 1998)—and a trauma initiative to create a trauma-sensitive treatment environment (Harris & Fallot, 2001) In addition, one unit in the forensic division with the highest utilization of restraint introduced a Social Learning Program, beginning late 2002 and fully implemented by 2005 (Menditto, Baldwin, O'Neal, & Beck, 1991; Newbill, Paul, Menditto, Springer, & Mehta, 2011). The combination of these interventions led to the dramatic decrease in restraint hours seen in the period from 2005 to 2006 and beyond. The elimination of ambulatory restraint hospital wide in 2007 led to further decrease in restraint hours seen in 2008. An attempt was made to expand the social learning program to other units of the hospital without success.

Table 1
Total Restraints Hours, Staff Injuries, and Workmen's Compensation Medical Costs, by Year

Year	Restraints hours	Staff injuries	WC medical costs
2005	12,127	235	839,479
2006	6,844	241	1,146,175
2007	1,616	228	602,594
2008	615	194	535,498
2009	567	200	383,584
2010	764	173	532,436
2011	421	187	816,660
2012	529	175	378,178

Table 2
Mean Annual Restraints Hours, Staff Injuries, and Workmen's Compensation (WC) Medical Costs, Baseline Period (2004–2008) and the Study Period (2009–2012)

Period	Restraints hours	Staff injuries	WC medical costs
Baseline	5,300	225	$780,937
Study	570	184	$527,715

Note. Restraints are expressed in hours per 100 patient days. Staff injuries are expressed in number of occurrences. WC medical costs are expressed in U.S. dollars.

Increases in restraint hours observed during the implementation period reflect admission of a number of patients with severe aggressive behaviors who were initially refractory to treatment and required sustained application of interventions described earlier to achieve success. Annual restraint hours total is thus a variable that is highly sensitive to random effects such as the admissions of individuals who disproportionally contribute to this metric and usually account for part of the year-to-year variability. The data show that a great benefit of the ARS-SIG approach was the *sustained* decline in restraint utilization. The magnitude of the year-to-year range of annual restraint hours was reduced from 11,512 hr in the baseline years to 243 hr in the intervention phase.

Discussion

Implications

The present study shows that systematic implementation of evidence-based best practices to reduce restraint utilization is associated with a large reduction in restraint utilization without increase in seclusion utilization. It is also associated with modest reductions in staff injuries and workmen's compensation expenditures. The findings of the present study provide support for the idea that it is possible to deliver care in public-sector hospitals with considerably lower reliance on restraint and seclusion utilization than is customary in these settings. The findings are consistent with the principles of the ARS-SIG that emphasize the importance of approaching restraint reduction through hands-on involvement of the hospital leadership, extensive staff training in relevant topics such as trauma-sensitive care, positive behavioral support plans, and in the use of restraint prevention tools, using data to inform and guide restraint reduction efforts, incorporating the input of patients, and debriefing.

Reduction of restraint and seclusion to minimal levels can thus be conceived as a reasonable long-term goal, congruent with the emergence of a new culture of inpatient care. Such a new culture

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should be based on a more compassionate appreciation of the patients' experience of the loss of control entailed in becoming a hospital resident, particularly in the case of involuntary hospitalization, and on using a range of interventions to *prevent* rather than *respond to* behavioral crises. Preventing crises requires the active involvement of hospital residents in rich treatment regimen that include skills-building modalities, for example, emotional self-regulation, and identifying and developing supports. A personnel need identified at the outset of the initiative included engaged psychiatrists, occupational therapists, social workers and psychologists, several of whom were hired to ensure that all patients had access to needed services such as sensory integration, discharge planning/community preparation, and positive behavioral support plans. In addition, engaging the directors of nursing, nursing supervisors and staff was crucial to culture change.

Lessons Learned

Observing the implementation of the ARS-SIG strategies across the 27 units of the hospital yields the following observations. First, having a language to describe the goal pursued was very helpful, as was the ability to refer to the precedent established by earlier ARS-SIG implementation efforts in other states. Second, the use of various metrics that quantify change (e.g., total hours of restraint per month per unit) allowed for setting specific goals and ensuring goal completion. It also made it possible to communicate progress to hospital employees, for example, through posters announcing *100 restraint-free days* placed at strategic locations throughout the hospital. Third, engaging patients in a dialogue on how to improve the quality of their care proved to be a valuable means of enhancing clinical care, leading, for instance, to the hiring of patients as paid teachers in the orientation program for new hospital staff. Fourth, the active involvement of key leadership staff including the Director of Recovery and Consumer Affairs and Chief of Nursing proved useful in guiding and overseeing institutional culture changes, in particular in leading efforts to develop, support, and promote person-centered, strengths-based recovery-oriented practices, and for rights protection, advocacy, complaints, and grievances by patients and their families.

Of note, a strong consensus now exists among the hospital leadership cadre involved in the initiative that *each* of the aforementioned principles contributed to lowered restraint utilization. In other words, it mattered that the hospital CEO held weekly meetings during which the initiative was planned, obstacles to implementation were reported based on data as well as anecdotal accounts, strategies were developed to overcome obstacles, necessary resources were marshaled, and so forth. It mattered that staff was trained systematically.

The psychological service delivery workforce proved to make valuable contributions toward violence prevention and hence reduction in restraint and seclusion utilization. At the hospital level, psychologists conducted trauma informed care trainings and trainings on behavioral support plans to facilitate staff implementation of such plans when needed. Psychologists were also tasked on each hospital unit with conducting an initial assessment of newly admitted individuals based on anamnesis and collateral data to generate an initial case conceptualization, later used to develop the initial treatment plan. They then developed basic behavioral intervention guidelines to address any behavior of concern, in particular aggression toward others or self. In cases where the behaviors of concern were particularly challenging and difficult to prevent, consultation from the BIS and its specialists in applied behavioral analysis was sought. Subsequent treatment plan reviews were enriched by data tracking occurrences of behaviors of concern and restraint and seclusion utilization data provided by psychologists and master's level developmental specialists from the BIS.

Finally, the investment of the state's mental health department in the process was crucial to implement changes such as hiring of consultants and several key hospital staff positions, including one psychologist per unit, one to two social workers per unit, and sufficient occupational therapy staff to address need on all units. In addition, leadership of the state department of mental health provided overall supervision of the project, including involvement of the DMHAS research division. Initiatives such as the one described here are expensive, but their benefit is priceless in improving the wellness and dignity of individuals receiving hospital care by promoting their recovery and improving their trust in clinical personnel.

Limitations of the Study

The present study illustrates the feasibility of intervening in a systematic manner to reduce restraint use in large hospital settings. The data were collected in a single institution, and it is thus not possible to rule out the possibility that the results of the initiative are attributable to unique characteristics of the hospital. It should further be noted that several initiatives to reduce violence and restraint use were implemented prior to, and during the baseline phase of the present study, making it possible that, in spite of the limited success of preceding initiatives, the results of the present study are attributable to successive waves of interventions. It is difficult to establish that the observed findings are solely attributable to the ARS-SIG initiative. Coinciding with the ARS-SIG process, changes were also introduced in the hospital practices as a result of a settlement agreement with the U.S. Department of Justice. Also, a societal climate of promotion of social justice has emerged in the wake of the civil rights movement, which opposes the use of excessive violence (e.g., police violence), including the use of restraint and seclusion in the care of individuals with psychiatric disabilities. It is possible that this societal change has influenced hospital staff independently of our initiative, resulting in some degree of reduction in restraint and seclusion use, though it seems unlikely that the entirety of the reduction of the observed magnitude could be attributable to a societal trend.

Future Research

As the value of the ARS-SIG approach in reducing restraint and seclusion utilization is tested in other large public-sector settings, it would be valuable to examine its long-term stability in terms of violence prevention, restraint use, and institutional culture. It would also be of interest to identify which of the ARS-SIG principles makes the greatest contribution to reducing violence and restraint and seclusion use. Research has shown that simply providing additional training to hospital personnel has limited long-term benefits toward that goal (Kelly, Fenwick, Brekke, & Novaco, 2016). In time, it may be possible to identify the most parsimonious combination of clinical innovations leading to change. This may enhance ease of implementation while reducing cost, which is a limiting factor in public-sector settings. It would

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also be of interest to identify practices that ensure that the positive effects of implementing the ARS-SIG principles are maintained over time. It is conceivable that it suffices for continued positive benefits to ensure continued use of the ARS-SIG derived practices. Alternatively, additional practices may be identified that promote maintenance, for example, formal fidelity checks to monitor continued adherence to all aspects of restraints reduction efforts.

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