

Relationship Between Seclusion and Restraint Reduction and Assaults in Pennsylvania's Forensic Services Centers: 2001–2010

Gregory M. Smith, M.S., Donna M. Ashbridge, R.N., M.S., Aidan Altenor, Ph.D., William Steinmetz, B.S., Robert H. Davis, M.D., Phil Mader, B.S., Dale K. Adair, M.D.

Objective: This prospective study assessed the use of seclusion and restraint in Pennsylvania forensic centers from 2001 through 2010. It also examined the correlation between declining use of containment procedures and patient-to-patient and patient-to-staff assaults.

Methods: The 2,741 episodes of restraint or seclusion involving 801 unique individuals served in state forensic centers during the study period were entered into a uniform database. Included in this data set were demographic and diagnostic data as well as the causes and injuries associated with each use of these procedures. These data were correlated with rates of patient-to-patient and patient-to-staff assaults with any injury for each month of this study.

Results: From 2001 to 2010, the rate of use of mechanical restraint significantly declined from 1.63 to .04 episodes

per 1,000 days ($p < .001$), and the rate of use of seclusion significantly declined from .89 to .04 episodes per 1,000 days ($p < .001$). There was a nonsignificant decline in the use of physical restraint during this span. During this decade, the rate of patient-to-staff assaults declined, and the rate of patient-to-patient assaults was unaffected.

Conclusions: Decreasing the use of containment procedures had a positive effect on reducing assaults. Leadership, data transparency, use of clinical alerts, workforce development, policy changes, and discontinuation of psychiatric use of PRN orders were all contributing factors. A philosophical change toward a recovery model of psychiatric care and services was the driving force behind this transformation.

Psychiatric Services in Advance (doi: 10.1176/appi.ps.201400378)

Pennsylvania's transformation of its public mental health system toward a recovery and resilience approach to services began in the 1990s. Over the next decade this change would affect almost every aspect of the commonwealth's delivery of behavioral health services. By 2005, stakeholders defined recovery as a self-determined and holistic journey undertaken as a way to heal and grow. They concluded that recovery is facilitated by relationships and environments that provide hope, empowerment, choices, and opportunities for achieving one's full potential (1).

Nowhere was this change more evident than in the system's effort to reduce the use of restrictive procedures. The initial goal was to enhance safety for everyone involved and to avoid traumatizing an already highly traumatized population.

This change was accomplished through a combination of training, monitoring, policy revisions, and culture change. It included providing RESPECT (www.youtube.com/watch?v=NqGF6MUMD2I) training for staff and the development of community support plans for individuals before they were

discharged from an inpatient facility. Evidence of Pennsylvania's initial efforts to reduce use of restrictive procedures was published in *Psychiatric Services* in 2005 (2).

The state's forensic services providers have also adopted the goal of recovery. Previously, the goal of forensic services was the safe custody, care, and control of the individual. The focus of treatment and discharge planning was returning the person to jail or prison. In contrast, the forensic recovery approach focuses on providing individuals with overall access to the services of the hospital system and, whenever possible, advocates for community discharge. During this ten-year span, the emphasis of forensic mental health services has shifted to teaching individuals to live safely in the community by managing their illness. Avoiding contact with the criminal justice system is considered an aspect of recovery.

Over the past 20 years, much has been written and reported about the use of seclusion and restraint within inpatient settings. Because of greater transparency governing the use of these measures, successful strategies were

identified on how to decrease their use (3,4). However, there have also been reports that reducing the use of restraint and seclusion exposes staff to increased assaults (5,6). Legislative bodies in several states have challenged mental health authorities to explain how the use of seclusion and restraint in forensic settings affects the level of violence (7–9). Furthermore, recent news accounts suggest that a conflict exists between the treatment needs and security requirements of people served in forensic settings. This conflict has frequently ended in tragedy (10–12).

Seclusion and restraint use continues to be an important metric of quality in measuring the effectiveness of inpatient care. However, treatment in forensic settings is seldom examined separately from inpatient treatment overall, so it is difficult to compare the use of seclusion and restraint in forensic settings with use in other inpatient settings.

The objective of this prospective study was to assess the use of restraint and seclusion in Pennsylvania's forensic centers and determine its effect on patient-to-patient and patient-to-staff assaults from 2001 through 2010.

METHODS

Study Setting

Pennsylvania's forensic services provide competency evaluations and restoration treatment to adults with open criminal charges who are admitted to a medium-security setting on a criminal court commitment. The system also provides court-ordered evaluations that assess an individual's mental state and how it may have contributed to the crime for which the person is charged (13). People who are acquitted of the crime for which they were admitted but who still need secure treatment are transferred to a local state hospital. In a few cases, a judge has ordered persons who have been acquitted to remain under the supervision of a forensic center for extended treatment.

In 2001 forensic services were provided on the grounds of Mayview, Norristown, and Warren state hospitals. By 2010, services were consolidated to two centers, each consisting of five units—four for men and one for women. The western region services were relocated to Torrance State Hospital, and the eastern region was served by the center at Norristown State Hospital. During this span, Mayview closed in November 2008, and Warren closed in October 2010.

Oversight of the forensic centers is provided by the Department of Human Services through the Office of Mental Health and Substance Abuse Services. The centers are administered by their local state hospital and are supported by specially trained staff who provide treatment and security. The workforce is unionized, and all centers were accredited by The Joint Commission throughout the study period.

Data Description and Analysis

The study included all procedures used during all containment events during the past decade. All data were anonymized

and reviewed to ensure uniform coding. The data were structured by using the National Association of State Mental Health Program Directors Research Institutes data dictionary (14).

Containment procedures included the use of mechanical restraints, defined as leather or soft Velcro ankle and wrist restraints; seclusion, defined as locking a person in a room alone; and physical restraint, defined as holding a person or otherwise controlling someone through the use of one's hands. These are the only containment procedures permitted for use by policy (15). Electrical shocking devices, chemical sprays, or chemical restraint were not permitted for use. In addition, consistent with national reporting procedures, the use of transfer restraints to move a person to and from a center was not reported.

Rates of use for each procedure type were established to control for differences in census. The monthly episodes for each procedure served as the numerator. The denominator was the number of days of care provided for each month. This result was multiplied by 1,000 to establish rates of use per 1,000 days.

The data were examined for associations with cause, results (such as injuries), gender, age, length of stay, racial and ethnic differences, diagnosis, day of week, and work shift. SPSS, version 22, statistical software was used to perform a linear regression analysis of the data over time. Statistical significance was determined at the $p < .05$ level. A Pearson correlation coefficient analysis was used to assess the relationship between the decreasing use of restrictive procedures and assaults (16).

RESULTS

From 2001 to 2010, 4,805 unique individuals were served by the centers, and on December 31, 2010, the last day of the study, 12% ($N=23$) of the 196 individuals in the forensic centers claimed veteran status on admission.

The forensic census increased from 185 in January 2001 to 196 in December 2010. Days of care increased from 69,523 in 2001 to a high of 76,759 in 2010. A total of 4,805 people were admitted and discharged from the service, of whom 3,894 (88%) came from and were discharged to local correctional agencies. During this decade, the mean length of stay was 118 days and the median length of stay was 69 days.

The study included all 2,741 procedures used during 2,176 events with 801 unique people during the past decade. Of the 2,176 events, 565 were complex, requiring the use of more than one procedure type.

The frequency of use and duration of containment procedures declined during the 120 months of this study (Table 1).

Of the 801 unique people for whom a containment procedure was used, 447 were involved in one-time events. Ninety-seven individuals were involved in five or more containment events, and 11 were involved in 20 or more events.

TABLE 1. Use of containment procedures in Pennsylvania forensic centers, 2001–2010

Year	Seclusion					Mechanical restraint					Physical restraint ^a					All containment procedures							
	Events		Hours		Per 1,000 days ^b	Events		Hours		Per 1,000 days ^b	Events		Hours		Per 1,000 days	Events		Hours		Per 1,000 days	Minutes ^b		
	N	Per 1,000 days ^b	N	Per 1,000 days ^b		N	Per 1,000 days ^b	N	Per 1,000 days ^b		N	Per 1,000 days	N	Per 1,000 days		N	Per 1,000 days	N	Per 1,000 days		N	Per 1,000 days	M
2001	62	.89	66	.95	63.9	16.2	113	1.63	159.8	2.3	84.9	19.2	144	2.07	10.37	.15	4.3	1.5	319	236.2	4.59	44.3	14.6
2002	65	.94	64.65	.94	59.7	11.3	117	1.7	372.5	5.41	191.0	171.6	196	2.85	12.31	.18	3.8	1.1	378	449.4	5.49	71.3	79.7
2003	56	.84	47.25	.71	50.6	27.4	98	1.48	198.4	2.99	121.4	253.5	284	4.28	17.07	.26	3.6	1.2	438	262.7	6.6	36	34.6
2004	50	.74	57.22	.85	68.7	24.7	65	.97	107.5	1.6	99.2	56.1	203	3.02	12.01	.18	3.5	1.2	318	176.7	4.73	33	17.6
2005	30	.43	28.08	.41	56.2	20.6	39	.56	39.5	.57	60.8	29.2	144	2.08	9.34	.13	3.9	1	213	76.9	3.08	21.7	10.3
2006	12	.18	8.42	.12	42.1	26.5	15	.22	9.3	.14	37.0	18.6	137	2.01	8.45	.12	3.7	1	164	26.1	2.41	9.6	4.9
2007	18	.26	11.22	.16	37.4	24.2	26	.38	30.0	.44	69.3	41.1	217	3.18	14.22	.21	3.9	1.7	261	55.4	3.82	12.7	5.2
2008	15	.21	8.4	.12	33.6	28.8	9	.12	6.6	.09	44.0	25.8	161	2.23	9.64	.13	3.6	1.1	185	24.6	2.56	8	3.1
2009	6	.08	5.75	.07	57.5	29.5	7	.09	2.65	.03	22.7	11.3	209	2.65	12.13	.15	3.5	.99	222	20.53	2.81	5.5	3.4
2010	3	.04	1.6	.02	32.0	12.9	3	.04	1.97	.03	39.4	18.3	237	3.09	25.52	.33	6.5	2.9	243	29.1	3.17	7.2	3

^a Physical restraint data were not reliably reported until January 2002.

^b Significant changes over the study period were found.

Mechanical Restraint

The high point for the use of mechanical restraint was 2002, when it was used 1.7 times per 1,000 days, for a total of 372 hours. By 2010, its use had significantly declined to .04 episodes per 1,000 days and lasted a total of two hours ($p < .001$). The mean \pm SD minutes in restraint declined significantly, from 191 minutes per event in 2002 to 39 minutes in 2010 ($p < .001$).

Seclusion

In 2001, there were .89 episodes of seclusion per 1,000 days, for a total of .95 hours per 1,000 days. By 2010, seclusion was used only three times, for a total of 1.6 hours. The time spent in seclusion declined significantly, from 69 minutes per event in 2004 to 32 minutes in 2010 ($p < .001$).

Physical Restraint

Physical restraint use declined during this span. In 2003, it was used 4.28 times per 1,000 days, and by 2010 it was used 3.09 times per 1,000 days. However, the average duration in physical restraint increased from 3.8 minutes in 2002 to 6.5 minutes in 2010.

Proximal Cause

Following each incident, staff reported the immediate cause that resulted in the use of a containment procedure. During this study, 4,440 assaults were reported statewide in the forensic centers to the risk management system. However, only 25% ($N=1,102$) resulted in the use of a containment procedure.

Of the 2,176 events involving the use of a containment procedure, aggression, defined as threatening another, was the leading reason for the use of a containment procedure, accounting for 36% ($N=777$), followed by patient-to-staff assaults (30%, $N=653$), patient-to-patient assaults (21%, $N=449$), and self-injurious behavior (7%, $N=157$).

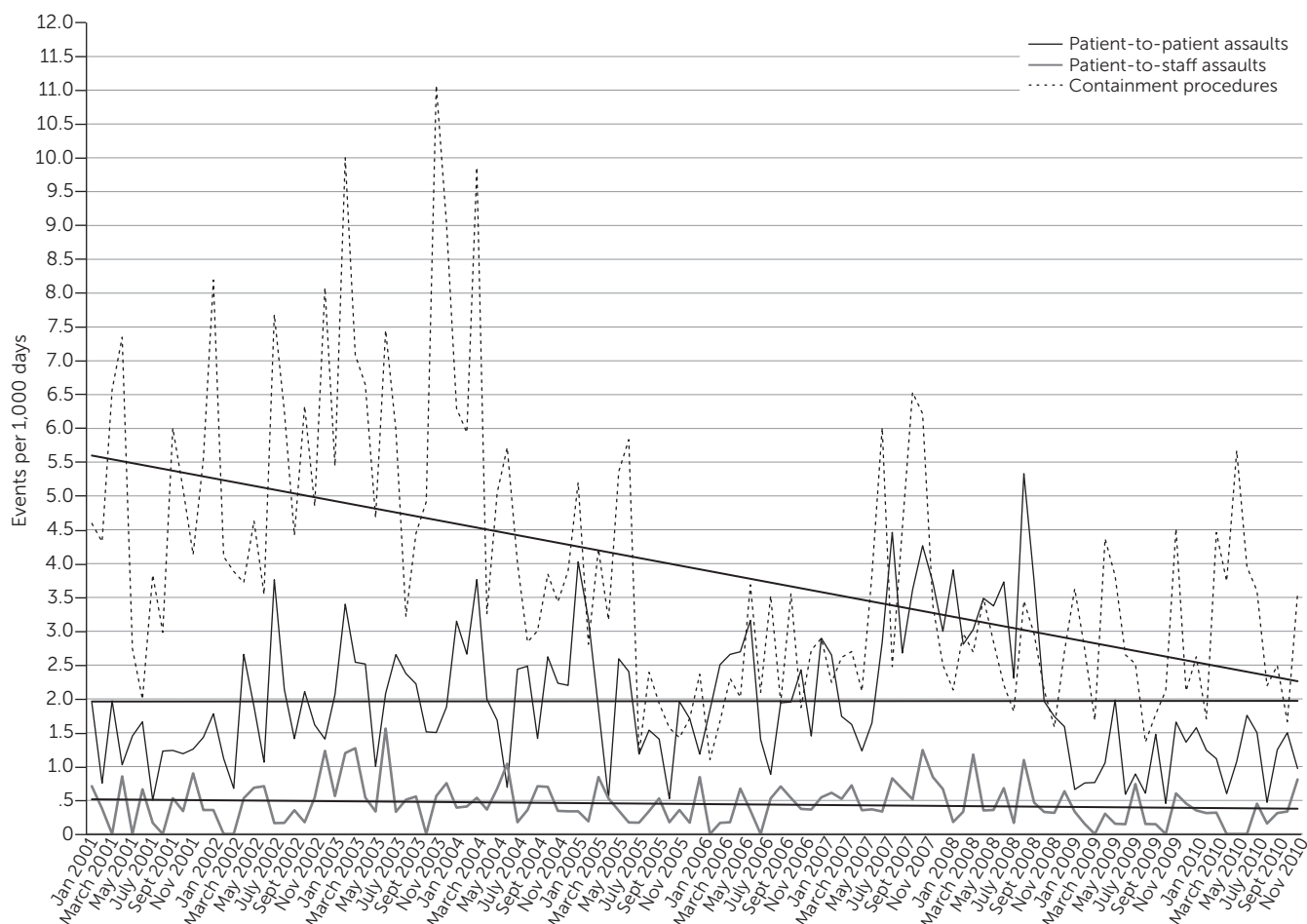
Injuries

State policy requires that an individual who is subject to a containment procedure be examined for injuries following the use of the procedure. The most severe injuries attributed to the use of containment procedures were lacerations requiring the use of sutures, reported in 17 incidents (.8%). Injuries involving bruises or skin abrasions were reported in 13% ($N=288$) of the events, and 79% ($N=1,716$) resulted in no injury.

Assaults

Pennsylvania's assault data were first publicly reported in September 2003 at the request of union leadership (17). There was concern that the declining use of containment procedures had increased assaults. During this study, an assault was defined as any aggressive act by a patient involving physical contact with another person that may or may not result in injury (18).

FIGURE 1. Rates of patient-to-patient and patient-to-staff assaults resulting in injury and rates of use of containment procedures in Pennsylvania forensic centers, 2001–2010



Between 2001 and 2010, more than 34% of assaults (N=1,685 of 4,945) involved an injury. Patient-to-staff assaults resulting in staff injury accounted for 6% (N=310) of all assaults, and patient-to-patient assaults resulting in patient injury accounted for 28% of assaults (N=1,375).

During this study, the mean rate of patient-to-patient assaults resulting in patient injury did not change (1.95 per 1,000 days) (Figure 1). However, the rate of patient-to-staff assaults resulting in staff injury declined from .5 per 1,000 days in 2001 to .4 per 1,000 days in 2010.

A correlation analysis of these data showed a positive association between the rate of patient-to-patient assaults and the declining use of all containment procedures ($r=.223$, $N=120$ months, $p<.02$) (Figure 2). Similarly, a stronger, positive association was shown between the declining rate of patient-to-staff assaults and the declining use of containment procedures ($r=.334$, $N=120$ months, $p<.001$) (Figure 3).

The analysis also showed a wide variance in the use of procedures in response to an assault. A procedure was used in 75% of patient-to-staff assaults (N=653 of 870) versus 13% of patient-to-patient assaults (N=449 of 3,570).

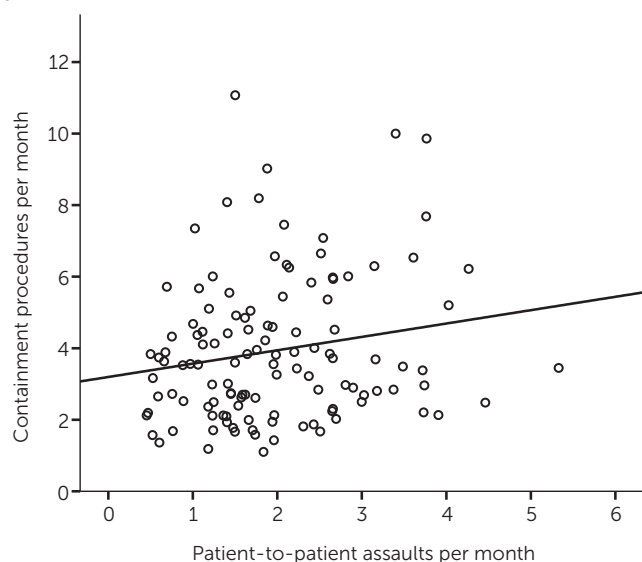
Unscheduled Medication Use

Starting in March 2004, the centers began reporting unscheduled use of medications for psychiatric indications. Unscheduled medications were defined as any medications given by PRN or provided by stat physician’s order (19). During March 2004 the centers administered 112.5 unscheduled medications per 1,000 days (N=646) (mean=112.5±78). By March 2006, statewide use of unscheduled medications had declined to 18.6 per 1,000 days (N=108) (mean=18.6±.8). Per state policy, effective March 2005, the centers discontinued the use of PRN orders for psychiatric indications and required that stat orders be predicated upon an examination by a physician (19,20).

Treatment Changes

Following any containment incident, a psychiatrist is required to review the patient’s treatment plan (18). In 999 (46%) of the 2,176 events involving the use of a containment procedure, counseling, education, or patient debriefing was added to the treatment plan; a medication change occurred in 19% (N=405) of the events. Placing a patient under greater supervision was ordered in 22% (N=70) of events involving

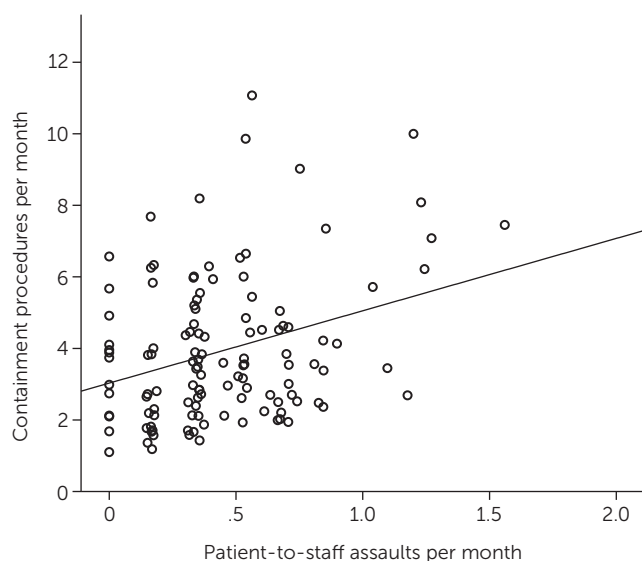
FIGURE 2. Correlation between monthly rates of patient-to-patient assaults resulting in injury and use of containment procedures, 2001–2010^a



^a $R^2 = .034$. R^2 shows the linear relationship between the declining use of containment procedures and patient-to-patient assaults over the 120 months of the study

the use of seclusion (N=317), compared with 9% (N=163) of events involving physical restraint (N=1,932) and 17% (N=86) of events involving mechanical restraint (N=492). Differences noted here are attributed to safety concerns for the patient and peers. Information from the debriefing process was not fully recorded until 2003.

FIGURE 3. Correlation between monthly rates of patient-to-staff assaults resulting in injury and use of containment procedures, 2001–2010^a



^a $R^2 = .101$. R^2 shows the linear relationship between the declining use of containment procedures and patient-to-staff assaults over the 120 months of the study

Diagnostic Differences

Of the 4,805 people served by forensic services during this study, 49% (N=2,341) had an axis I diagnosis of schizophrenia or psychotic disorder. This group accounted for 53% (N=1,155) of the events reported. People with a mood disorder diagnosis (all subtypes) represented 23% (N=1,088) of the population served by the forensic service and accounted for 24% (N=532) of the events reported. People with intellectual disabilities, who represented .25% (N=12) of the population, accounted for 9% (N=204) of the events reported and 86 hours of total use.

Gender Differences

During this decade, 915 women and 3,890 men were served in the centers. Of the 915 women, 19% (N=175) were restrained or secluded, accounting for 616 of the procedures used. Of the 3,890 men, 16% (N=627) were restrained or secluded, accounting for 1,560 procedures. Overall, the variation in rates of exposure (N=3.52 events per woman and 2.48 events per man) are attributed to differences in acuity and responsiveness to treatment during the first month following admission to the forensic service.

Racial and Ethnic Differences

During this study, participants in forensic services represented more than six different racial and ethnic groups, including 2,775 whites (58%), 1,744 blacks (36%), and 235 Hispanics (5%). Whites accounted for 1,151 (53%) of the events reported versus 872 (40%) for blacks and 126 (6%) for Hispanics.

Overall, whites were held the longest in mechanical and physical restraint (35 ± 11 minutes, compared with 24 ± 11 minutes for blacks and 13 ± 11 minutes for Hispanics). However, when the 492 episodes of mechanical restraint were examined separately, the differences widened. Whites, on average, were held for 141 ± 63 minutes, compared with 85 ± 63 minutes for blacks and 15 ± 63 minutes for Hispanics. In regard to seclusion, which was used 317 times during the study, whites were held for 57 ± 1 minutes, compared with 56 ± 1 minutes for blacks. In regard to physical restraint, which was used 1,932 times, whites were held for 5 ± 1 minutes versus 4 ± 1 minutes among blacks and Hispanics.

Day of Week, Work Shift

This study also examined whether use of containment-related events differed by day of the week and work shift. Use was highest on Thursdays, accounting for 17% (N=366) of the episodes reported. The fewest episodes occurred on Saturdays, which accounted for 9% (N=190) of the events reported.

Most episodes of containment occurred on the first shift, from 7:00 a.m. to 3:00 p.m., accounting for 50% (N=1,088) of the episodes reported. The second shift, from 3:00 p.m. to 11:00 p.m., accounted for 44% (N=960) of episodes, and the third shift accounted for 6% of episodes (N=127).

Age and Length of Stay

Nearly half of all events, 47% (N=1,026), involved people between the ages of 20 and 29. People between the ages of 18 and 21 accounted for 14% (N=299) of the events reported.

During this study, 14% (N=304) of the events reported occurred within the first week of admission, and 41% (N=903) occurred within the first 30 days of admission.

DISCUSSION

This study confirms findings related to the reduction in use of containment procedures in Pennsylvania's civil hospitals and thus extends the efficacy of Pennsylvania's approach to the use of containment to a forensic population (21).

These results are in marked contrast to reports that efforts to reduce seclusion and restraint utilization were met with increases in patient-directed assaults, leading to the conclusion that such initiatives are "not without risk" (6).

The major difference between this study and the study quoted above is that our findings are associated with the use of an approach for over a decade (6). Perhaps the most important feature of the study, however, is Pennsylvania's emphasis on staff training and focus on deescalation techniques.

In recognition of the risks associated with changing the use of containment procedures, Pennsylvania referred to its new initiative as a "cultural transformation." The foundational core behind this change was to support the recovery of individuals served and safety. Nevertheless, when a historical practice becomes less readily available, it may lead to "staff frustration" (6) and overreporting of the incidences of violence. To address these concerns, staff were encouraged to "over-report/report every incident" to assure the hospital community that leadership wanted to ensure data integrity, maintain transparency, and respond when challenged about the efficacy of each intervention.

These changes also accounted for, in part, the decreases reported in patient-to-staff assaults resulting in injury, given that any use of a procedure is a violent act that is difficult to control, resulting too frequently, regardless of the precautions taken, in physical or emotional injury. Over time, decreasing the use of containment procedures led to decreases in patient-to-staff assaults resulting in any injury.

The ongoing effort to reduce the use of these procedures can result in clinical environments that provide safety and support to the entire community without further traumatizing the individuals served and their caregivers.

In addition to providing workforce training, this effort included the development of response teams that assured an organized intervention to a crisis. Discontinuing the use of PRN orders for psychiatric indications in 2005 was pivotal because it decreased the likelihood of using medication as a chemical restraint (20).

Policy changes were essential because they unified and limited the use of these procedures. They also ensured that

the use of restraint or seclusion was the last resort in supporting a person in crisis.

Using data at all levels of the agency was a fundamental change that enabled the monitoring of performance by unit and patient. Clinical alerts were a valuable tool that raised attention to specific individuals who were receiving high amounts of medication or engaging in frequent assaults.

Our analyses of the reasons for the use of containment procedures were limited to the proximal cause. The study did not assess the underlying rationale that may have led to the use of a containment procedure nor how this information was used to reduce patient aggression. Future studies on restraint reduction should evaluate the effectiveness of this proactive process and how it is used to reduce patient aggression.

This study also showed that patient-to-patient assaults were unaffected by changes in the use of containment procedures.

Using data to identify periods of high activity for assaults on individual units and use of procedures by work shift and to adjust routines accordingly should have a positive effect on reducing aggression. Forensic staff should be proactive in this regard and use historical data as a tool to plan for a safe environment. In addition, applying information obtained during the initial patient assessments can help develop personalized crisis plans for people who have significant histories of violence.

CONCLUSIONS

This study showed that decreasing the use of containment procedures had a positive effect on reducing patient assaults. Over the span of this study the use of seclusion and mechanical restraint significantly declined and the rate of patient-to-staff assaults associated with injury decreased.

AUTHOR AND ARTICLE INFORMATION

Mr. Smith and Mr. Steinmetz are with Allentown State Hospital, Allentown, Pennsylvania (e-mail: gregs@ptdprolog.net). Ms. Ashbridge is with Danville State Hospital, Danville, Pennsylvania. Dr. Altenor is with Wernersville State Hospital, Wernersville, Pennsylvania. Dr. Davis, Mr. Mader, and Dr. Adair are with the Office of Mental Health and Substance Abuse Services, Department of Human Services, Harrisburg, Pennsylvania. Information from this study was presented at the Eighth European Conference on Violence in Clinical Psychiatry, Ghent, Belgium, October 23–26, 2013, and at the Congress on Seclusion and Restraint Reduction, Kloetinge, the Netherlands, October 28, 2013.

The authors thank the security staff, nurses, doctors, and program services staff who work in the Pennsylvania forensic service. Their support of the nonrestraint approach to psychiatric care and services is sincerely appreciated. The authors also recognize the state hospital performance improvement staff for their contributions to the data reported here and John Deegan, M.S., for his assistance. They also gratefully acknowledge the work and leadership of Charles G. Curie, M.A., A.C.S.W., George A. Kopchick, M.S., Bonnie Hardenstine, B.S., Roberta J. Altenor, M.S.N., Louise A. Cochenour, R.N., Jeffrey Darling, R.N., Hannah Fry, R.N., Marcie Hepner, M.S., John Pedrazzani, M.S., and Gail Vant Zeldfe, Ph.D.

The authors report no financial relationships with commercial interests. Received August 29, 2014; revision received March 18, 2015; accepted April 13, 2015; published online August 3, 2015.

REFERENCES

1. A Call for Change: Toward a Recovery-Oriented Mental Health Services System for Adults. Harrisburg, Pennsylvania Office of Mental Health and Substance Abuse Services, 2005. Available at www.parecovery.org/documents/ACallForChange.pdf
2. Smith GM, Davis RH, Bixler EO, et al: Pennsylvania State Hospital system's seclusion and restraint reduction program. *Psychiatric Services* 56:1115–1122, 2005
3. Hughs R: *Rights, Risks and Restraint-Free Care of Older People*. London, Kingsley, 2010
4. Huckshorn K: *Six Core Strategies to Reduce the Use of Seclusion and Restraint Planning Tool*. Alexandria, Va, National Association of State Mental Health Program Directors Research Institute, Inc, 2008. Available at www.nasmhp.org/docs/NCTIC/Consolidated_Six_Core_Strategies_Document.pdf
5. Stuckey A: Why are so many workers being hurt at the Fulton State Hospital? *St Louis Post-Dispatch*, April 13, 2014. Available at www.stltoday.com/news/local/govt-and-politics/why-are-so-many-workers-being-hurt-at-the-fulton/article_a3715f98-acdd-55d9-b9e1-0b099e1f6bfa.html
6. Khadivi AN, Patel RC, Atkinson AR, et al: Association between seclusion and restraint and patient-related violence. *Psychiatric Services* 55:1311–1312, 2004
7. Kerr K: Hawaii state hospital plagued with security issues. *KHON 2*, May 19, 2014. Available at khon2.com/2014/05/19/hawaii-state-hospital-plagued-with-security-issues
8. Hufstader L: State hospital safety bill headed for legislative hearing. *Napa Valley Patch*, June 14, 2011. Available at patch.com/california/napavalley/state-hospital-safety-bill-headed-for-legislative-hearing#.U_ig7aPG3s0
9. Linehan D: Security hospital fined over workplace safety. *Mankato Free Press*, Aug 15, 2014. Available at www.mankatofreepress.com/news/local_news/article_e1821600-b78a-53ec-b038-da58efb8e9e.html
10. Vanderveen C: Mentally ill inmate's death prompts federal lawsuit. *KUSA*, June 19, 2014 Available at www.9news.com/longform/news/investigations/2014/06/19/mentally-ill-death-lawsuit/10882089
11. Rezendes M: Citing Joshua Messier's 'Awful Death,' Gov Deval Patrick Calls for Curtailing Use of Restraints on Mentally Ill Inmates. *Lexington, Ky, Council of State Governments*, Feb 20, 2014. Available at [citing-joshua-messiers-awful-death-gov-deval-patrick-calls-for-curtailing-use-of-restraints-on-mentally-ill-inmates/](http://csgjusticecenter.org/mental-health/media-clips/citing-joshua-messiers-awful-death-gov-deval-patrick-calls-for-curtailing-use-of-restraints-on-mentally-ill-inmates/)
12. Agathright D: Video shows struggling mental patient die in restraint. *ABC News*, Denver, Nov 7, 2011. Available at www.thedenverchannel.com/news/video-shows-struggling-mental-patient-die-in-restraint
13. Torrance State Hospital Regional Forensic Psychiatric Center. Harrisburg, Pa, Department of Human Services. Available at www.dhs.state.pa.us/foradults/statehospitals/torrancestatehospital/index.htm
14. Hospital Based Psychiatric Inpatient Core Measure Set. Falls Church, Va, National Association of State Mental Health Program Directors Research Institute, 2005. Available at www.nri-inc.org/#/bhpm/c/nxs
15. Use of Restraints, Seclusion, and Exclusion in State Mental Hospitals and Restoration Center. *Office of Mental Health And Substance Abuse Services Bulletin*, Nov 30, 2009. Available at www.dhs.state.pa.us/cs/groups/webcontent/documents/bulletin_admin/d_005644.pdf
16. Cohen J, Cohen P, West S, et al: *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*, 3rd ed. Mahwah, NJ, Erlbaum, 2003
17. Pennsylvania State Hospital Risk Management Summary Reports. Harrisburg, Pa, Department of Human Services. Available at www.dhs.state.pa.us/publications/forproviders/state-hospitalriskmanagementsummaryreports/index.htm. Accessed July 6, 2015
18. Management of Incidents: SI-815 Incident Reporting and Risk Management Policy. SMH-10-01. Harrisburg, Pa, Department of Human Services. Available at www.dhs.state.pa.us/publications/bulletinsearch/bulletinselected/index.htm?bn=SMH-10-01&o=N&po=OMHSAS&id=11/10/2010
19. Unscheduled Use of Medication in the State Hospital System: PRN & Stat Medication Orders. SMH-05-01. Harrisburg, Pa, Department of Public Welfare, March 1, 2005. Available at www.dhs.state.pa.us/cs/groups/webcontent/documents/bulletin_admin/d_005874.pdf
20. Smith GM, Davis RH, Altenor A, et al: Psychiatric use of unscheduled medications in the Pennsylvania state hospital system: effects of discontinuing the use of PRN orders. *Community Mental Health Journal* 44:261–270, 2008
21. Smith GM, Ashbridge D, Davis, RH, et al: Correlation between seclusion and restraint reduction and assaults by patients in Pennsylvania's state hospitals. *Psychiatric Services* 66:303–309, 2015