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Decreasing restraint times on an inpatient psychiatric unit.

Maria Siegel
msiegel816@gmail.com

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Decreasing Restraint Times on an Inpatient Psychiatric Unit

by

Maria Siegel

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requirements for the degree of

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<u>Dr. Katharine Adelstein</u> DNP Project Chair	<u>July 24, 2023</u> Date
<u>Dr. Said Abusalem</u> DNP Project Committee Member	<u>July 24, 2023</u> Date
<u>Dr. Sara Robertson</u> Associate Dean DNP and APRN Programs	_____ Date

Dedication

To my father, Anthony J. Siegel, MD. Thank you for being my role model, my support, and my hero for all my life. I hope to make you proud.

Acknowledgments

Thank you to the love of my life, Arthur Oliva, DO, who helped me organize and process this project.

Thank you to family, especially my mother, Martine Siegel, who inspired me to be a psychiatric nurse.

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Abstract

Restraints are widely used on inpatient psychiatric units when psychiatric patients exhibit escalating behaviors. Physical restraints, including seclusion, increase patients' risk for injury and psychological trauma. Acute inpatient psychiatric units should aim to use restraints only as a last resort and for as little time as possible to keep the patient and others safe. The literature suggests that ways to decrease restraint rates on inpatient psychiatric units include risk assessment for early identification and proper use of alternative measures. Nursing staff education has been proven to play an important role in decreasing overall restraint times on inpatient psychiatric units. The focus of this project was implementing an education program for nursing staff on a medical-psychiatric unit at University of Louisville Hospital. The outcomes observed from this quality improvement project included improved nursing knowledge, evidenced by an increase in post-test scores after the educational session ($P < 0.001$), and an 18% decrease in average length of restraint minutes per episode post-intervention ($p < 0.02$). Though there was an increase in number of alternative measures used per restraint episode and number of screening tools completed post-intervention, these data did not reach significance likely due to an abbreviated post-sample.

Keywords: restraints, restraint, seclusion, psychiatric nursing, DASA screening tool, alternative measures, mental health, inpatient psychiatric unit

Background

Patient and staff safety are of utmost importance in an inpatient psychiatric setting. Oftentimes patients amid an acute psychiatric crisis can be a danger to themselves or others and may act with episodes of aggression. According to Ye et al. (2019), “physical restraint is a coercive approach of reducing a patient's physical movement, which aims to ensure safety and maintain necessary treatment when a patient poses life-threatening risks”. Types of physical restraint include seclusion or placing the patient in a locked room with decreased sensory stimulation and mechanical restraint, or the use of physical restraints to restrict movement of arms, legs, or torso (Putkonen et al., 2013).

Problem

The population for this project was the nursing staff on the inpatient psychiatric unit at University of Louisville Hospital (3 North), which was the setting for the project. This unit is unique to the city of Louisville, acting as both a medical psychiatric unit as well as a tertiary referral center. The unit includes ten psychiatric beds and ten medical beds for patients with comorbid medical needs in psychiatric crisis. The milieu can be a combination of severely agitated patients as well as medically frail patients. Patients in restraints on the unit can be young, psychotic, or violent patients, to elderly patients with dementia. It is paramount that patient safety and minimizing harm are at the core of the care provided on this unit. The purpose of this project is to minimize harm and maximize patient safety by decreasing restraint times on the unit and application of restraints using an educational intervention.

From January 2021 through December, there was a total of 4,125 restraint minutes, which converts to a total of 68.7 hours. On average, the number of restraint minutes per episode was 100.6 minutes. The greatest number of total restraint minutes was for the month of May, in

which there was a total of 393.3 minutes for six restraint episodes, all for one patient, which equates to approximately 65.55 minutes per episode. The total number of restraint episodes was 41, and the number of patients that required restraint was 30. Ideally, when a patient is secluded or restrained, the goal is to discontinue the restraint within one hour. The restraint times per episode stayed under one hour in only three months out of the year.

Restraint use in in the year of 2022 was even more stark. There was a total of 5,415.1 restraint minutes, equating to 90.3 hours. The total number of restraint episodes for the 2022 year was 53, with the number of individual patients requiring restraints being 30. The average length of per restraint episode was 102.2 minutes that year. The highest volume restraint month was January, where restraints were used a total of 12 times, for a total of 1,392 minutes and average of 116 minutes per episode. This data shows that restraint is commonly used on 3 North, and on average the restraints last longer than 1 hour.

Review of the Literature

Patients are often unsafely and unnecessarily restrained on inpatient psychiatric units (De Berardis et al., 2020). During episodes of restraint, preventable physical and psychological trauma can be experienced, such as discomfort; injury; death; feelings of fear, anxiety, and neglect; and triggering of past traumatic events (Goulet & Larue, 2017). Implementing a risk assessment tool and focusing on events leading up to restraint can help reduce length of or number of restraint episodes, creating a safer environment. Research suggests that timely and rational pharmacological therapies, verbal de-escalation and redirection, psychotherapies, modulation of sensory stimuli, staff training, working cohesion, and improving staff knowledge are alternatives to restraint that should be considered to reduce unsafe and unnecessary restraint on an inpatient psychiatric unit (De Berardis et al., 2020).

Despite emphasis on employing the least restrictive measures first to control aggressive behaviors, restraints are widely used in psychiatric facilities. Noorthoorn et al. (2015) found that seclusion and restraints have been used in as many as 23% of psychiatric inpatients. Estimates of post-traumatic stress reaction among patients after a restraint incident varies from 25-45% (Chieze et al., 2019). Limitations among the research related to the question of the efficacy of restraint use and its impact on psychiatric patients include studies with small sample sizes, limited patient populations, and inconclusive data. A common theme addressed in the literature regarding the use and overuse of restraints is that further research is needed to draw a conclusion on best practices around the use of restraints in psychiatric inpatient units. Research on the use of and consequences of different types of physical restraints is also limited.

Risk Assessment

A meta-analysis that studied programs, policies, and work practices for preventing and reducing aggression towards health care workers found that there was only one intervention, a regular risk assessment of patients, that showed a reduction in aggression towards healthcare workers (Spelten et al., 2020). Assessment scales can help to identify common risk factors for violent behavior. Specifically, the Dynamic Appraisal of Situational Aggression scale (DASA) includes seven items: negative attitudes, impulsivity, irritability, verbal threats, sensitivity to perceived provocation, easily angered when requests are denied, and unwillingness to follow directions. Each item is scored for its presence or absence in the 24 hours prior to assessment. A final risk judgment (low, medium, high) is formed based on a review of the items and the total score (Lantta et al., 2016). A study conducted by Griffith et al. compared DASA-IV assessments and structured clinical judgements with 997 unaided clinical risk judgements. DASA-IV total scores predicted aggression significantly better than unaided clinical risk ratings over the subsequent 24 hours and for the next shift. This study found the tool to be a valid measure of

aggressive risk (2013). Additionally, the scale has repeatedly exhibited good-to-excellent predictive accuracy for aggression in both Asian and Western countries with good internal consistency and interrater reliability (Lantta et al., 2016). Identifying those patients more likely to require restraints during hospitalization can lead to safer outcomes by alerting the nursing staff of the potential for aggression, therefore allowing them to intervene early with alternative measures when escalating behaviors occur.

Staff Education

A study conducted by Duxbury et al. implemented a project titled REsTRAIN YOURSELF that focused on staff education and review of restraint data on 14 inpatient psychiatric wards. The REsTRAIN YOURSELF initiative comprised of a management tool that included potential triggers to behavior warranting restraint, care plans that focused on reducing aggressive episodes, staff de-escalation skills training, and the availability of low-stimulus rooms for agitated patients. The study found that there was a significant decrease in restraint rates on the wards where the project was implemented, evidenced by an average reduction of restraint by 22%, with some wards showing a reduction of 60% (2018). Another study that analyzed methods of violence management in traditional psychiatric hospital settings across 17 European countries found that 19.5% of responders to violent scenarios in these settings had not received training on violence management (Cowman et al., 2017). These studies further stress the importance of staff education on response to patient aggression.

Minimizing Use

It is commonly suggested that psychiatric care providers minimize the use of restraints in practice due to the possibility for physical and psychological adverse effects. A systemic review that analyzed 67 studies to help identify possible harmful adverse effects from coercive

interventions concluded that restraint use has been shown in some cases to cause cardiac deterioration/arrest, pulmonary embolism, and strangulation. The study states that continuous personal supervision during such measures is necessary (Kersting et al., 2019). When restraints are necessary for safety and other less-restrictive measures have failed, restraints should be discontinued promptly when a threat is no longer present for safer outcomes. Increased RN monitoring of restrained patients significantly decreases restraint total times (Allen et al., 2019).

Project Description

QI Model

The quality improvement model that best benefited this project was the STAR Model. This model focuses on five categories for design policies. These categories include strategy, structure, processes, awards, and people. The *strategy* category is meant to determine direction. The direction chosen for this project included encouraging compliance among nursing staff with a risk assessment tool (DASA screening tool), stressing the importance of discontinuing restraints before one hour, and collecting restraint/seclusion data in Cerner to evaluate alternative measures used.

The *structure* category determines the location of decision-making power. Compliance among nursing staff was paramount in the success of this project. Participation among nursing staff with the educational session allowed the project to move forward. The *processes* category has to do with the flow of information. The population addressed in this project included the nursing staff. The information on strategies to decrease restraint times was directed at nurses on the psychiatric unit, because the decision to restrain a patient is theirs. The success of this project

was dependent on the competency and skills of the nursing staff. The processes included lateral processes that focused on workflow.

The *rewards* category focuses on aligning the goals of the organization with the goals of the employee. The most important benefit of decreasing restraint times is decreased injury among both staff and patients. Education for this project focused on showing how decreased restraint times prevents injury to help motivate the nursing staff. Lastly, the *people* area governs the human resource policies of recruiting, selection, rotation, training, and development. Policies in place regarding restraint use on the unit were handed out to the nursing staff and used to direct the implementation of the project. Policy components included the unit goal of restraint episodes lasting less than 60 minutes. This goal was written out in the educational handout and stressed in the education session, leading to a decrease in the average total of restraint minutes per episode for the implementation months.

Methods

This was a quantitative study that focused on implementing an educational intervention to teach nurses about alternative measures, the importance of the DASA screening tool, and increased monitoring, with the goal of reducing average restraint times per episode on the unit. All day shift nurses were individually educated on these topics. The DASA screening tool portion of the educational session focused on ensuring that each newly admitted patient had a previously completed DASA screen by emergency psychiatry, and if not, one would be completed on the patient by the admitting nurse. The DASA screen is available through the Cerner charting system and is designed to trigger a re-evaluation once every shift for high-risk patients. Additionally, the staff education included the importance of discontinuing restraints in

less than an hour after initiation. A handout was provided to all day shift nurses on the unit with this information. Pre and post-tests were administered to monitor understanding.

The individuals involved in the completion and success of this project included primary nurses on the unit, charge nurses, the nurse manager, mental health technicians, and physicians. Primary nurses were responsible for making the decision to initiate restraints and when to discontinue them. The nurse manager was responsible for allowing time for the educational sessions. The entire nursing staff, including both nurses and mental health technicians, were responsible for using alternative measures, de-escalating patients, verbal redirection, and safe restraint initiation and discontinuation. Physicians were responsible for ordering as-needed medications for agitation, and the patients' nurses were responsible for making sure these standing orders were available for potentially aggressive patients and consulting with the physician if they were not.

Data Collection

Pre and post-tests were completed by each day shift nurse during and after the educational session. Data on each individual restraint episode was collected on the pre-intervention years from the restraint and seclusion binder on the unit, which is divided by months. The purpose of this binder is to keep track of all restraint episodes, as the nurse places a debriefing form after each restraint episode in this binder for the corresponding month. Data on alternative measures can be found here, and in the patient's electronic health record under the event note and restraint/seclusion monitoring tab. The assistant nurse manager keeps a list of each restrained patient's medical record number for the previous and current years. This information was used for analysis of alternative measures and screening tool use before the

intervention. Finally, the monthly restraint times per episode on the unit were collected for the 2021 and 2022 years.

Outcomes

This project included short-term and intermediate-term outcomes. The first short-term outcome was to educate > 90% of day shift nursing staff on the inpatient psychiatric unit on alternative measures and decreasing restraint times. All twelve day-shift nurses attended the educational setting, meeting this outcome. Effectiveness was measured by a 95% pass rate on the post-test by the third month of the project. The second short-term outcome was to educate >90% of the nursing staff on risk assessment for restraint, including the importance of completing the DASA screening tool in Cerner. This was met, measured by a 95% pass rate on the post-test by the third month of the project.

The first intermediate term expected outcome was that there would be a decrease in restraint times by May 2023. It was expected that there would be an increase in nursing use of the DASA scale and restraint/seclusion treatment plan forms by May 2023. The final intermediate-term expected outcome was that there would be an increase in nursing restraint charting that included at least three alternative measures before the restraint episode by May 2023.

Intervention

Beginning in February, 2023, a total of twelve day shift nurses on 3 North participated in an educational session, in which they were given a pre-test with 8 questions pertaining to restraints and seclusion. After the pre-test, they were handed a brochure and given a 15-20 minute explanation on the components of the brochure. The brochure emphasized the importance of the DASA screening tool. Nurses were instructed to complete this screening tool once for each

patient on admission if not previously completed by emergency psychiatric staff. They were instructed to complete the screen daily for those patients that were identified as moderate to high risk for aggression.

The educational session and brochure emphasized the unit goal of discontinuing restraints within an hour after initiation. Ways suggested to the nurse on how to meet this goal included completing nursing rounds on the restrained person more frequently than every hour, which is the legal requirement. The nurse was advised to round on their restrained patients as frequently as possible, ideally every 15 minutes. This would allow the nurse to observe calm behavior sooner, possibly resulting in decreased length of the restraint episode.

The brochure and educational session included statistical data of the risk for injury and psychological trauma to the patient during a restraint episode. This was followed by a list of examples of alternative measures to use before the decision to restrain. Alternative measures listed included verbal de-escalation, limit setting, moving the patient to a calmer and less stimulating environment, offering medications by mouth or intramuscular injection, and allowing the patient to vent. The last educational sessions took place in May, 2023.

Data Analysis and Procedure

A paired t-test analysis was completed to assess nursing knowledge after the educational session, based on the pre and post-test scores. The intervention took place over four months (February- May 2023). During these four months, charts were analyzed for all patients who were restrained in this four-month time frame. Nursing notes for these patients were reviewed by the author and data on alternative measures and DASA screening tool use was collected and compared to the previous year's data.

Charting for each restraint episode during these times was reviewed to determine if intervention components were used. This data was obtained from the patient event charting note completed by the nurse. To analyze the effectiveness of the educational intervention, pre-intervention restraint times and instances (4-months) were compared with post-intervention restraint times and instances using an independent t-test. To analyze the data regarding DASA screening tool use and alternative measures used, an independent t-test was conducted.

Ethical Considerations and Permissions

Human Subjects Protection and Permissions

Confidentiality was maintained for all human subjects in this project. No names of nursing staff were included in the data. Data was stored on secure computers on the inpatient psychiatric unit, to which only staff on the unit have access to. No names or significant identifying data was included in this project.

IRB approval was obtained by submitting this project proposal to the University of Louisville IRB research body. Permissions were granted by the University of Louisville Hospital Research Committee

Results

Restraint Minutes

Data were analyzed using IBM SPSS version 29.0 (241). An independent t-test was used to compare the average length of restraint episode per month before and after the intervention. During the project period, there were 910 restraint minutes with 11 restraint episodes. This equated to an average length of restraint time per episode of 82.7 minutes. This can be compared to the 2021 and 2022 averages of 100.6 and 102.1 minutes, respectively. Overall, there was a

roughly 18% decrease in average length of restraint episodes after intervention compared to the 2021 and 2022 data.(Figure 1). This decrease was significant ($P<0.02$).

Pre and Post-Test Analysis

A paired t-test was used to compare knowledge before and after the educational sessions. The average score on the test increased after the education session by 1.8 points. The increase in knowledge was significant ($P<0.001$)

Documentation of Alternative Measures Used

Nursing documentation in the patient's electronic health record as well as the required restraint paperwork were reviewed for all restraint episodes in the 2022 year. This included DASA screening and alternative measures used to avert restraints. The 2021 data was unavailable. The number of alternative measures used prior to restraint use pre- and post-intervention are shown in Figure 2 and 3.

An independent t-test was used to analyze this data. Of the 52 restraint episodes in 2022, only 22 had at least three documented alternative measures used before the restraint episode, or 42.3%. Of the 11 documented restraint episodes during these months, seven had at least three documented alternative measures used before the restraint episode, or 63.6%. This illustrates a 21.3% increase in documented alternative measures of at least three or more. Though this data is promising, it did not reach significance ($P=0.08$), likely due to an abbreviated post-sample.

DASA Screening Tool Use

An independent t-test was used to analyze data. The electronic health records in the Cerner charting system were reviewed for each patient that was restrained in 2022 and in the post-intervention months of February-May 2023. The 2021 data was unavailable. Out of 30 patients restrained in 2022, 12 had DASA screens completed (40.0%). Of the 9 patients restrained in the

post-intervention months, 8 had a DASA screen completed (88.9%). This data was assembled in Figure 4. Microsoft Excel was utilized for visual chart development. This data is also promising though it did not reach significance ($P=0.09$) due to the variance in sample size.

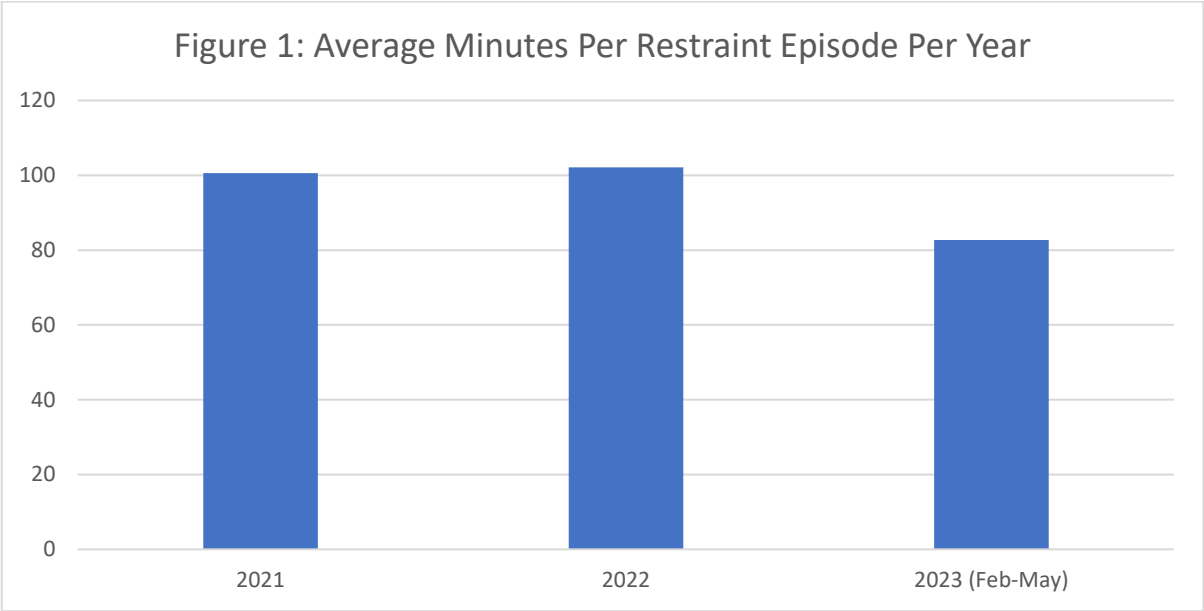


Figure 2: Alternative Measures Used Per-Restraint Episode Pre-Intervention (2022)

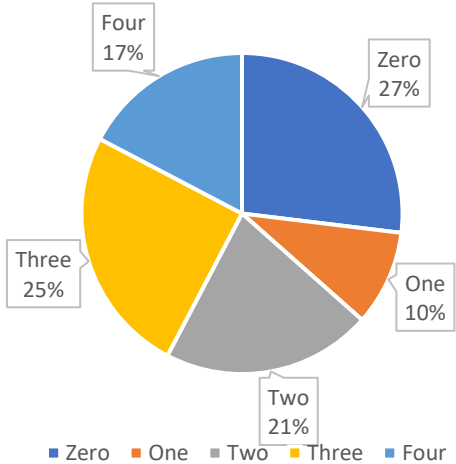
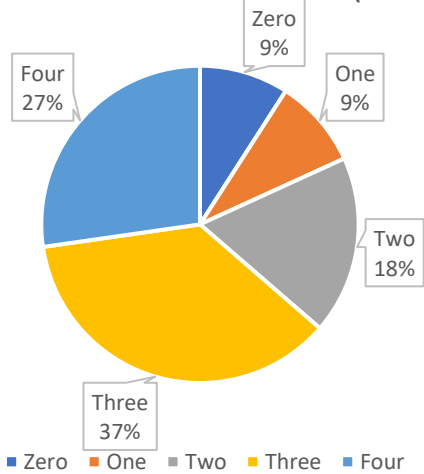
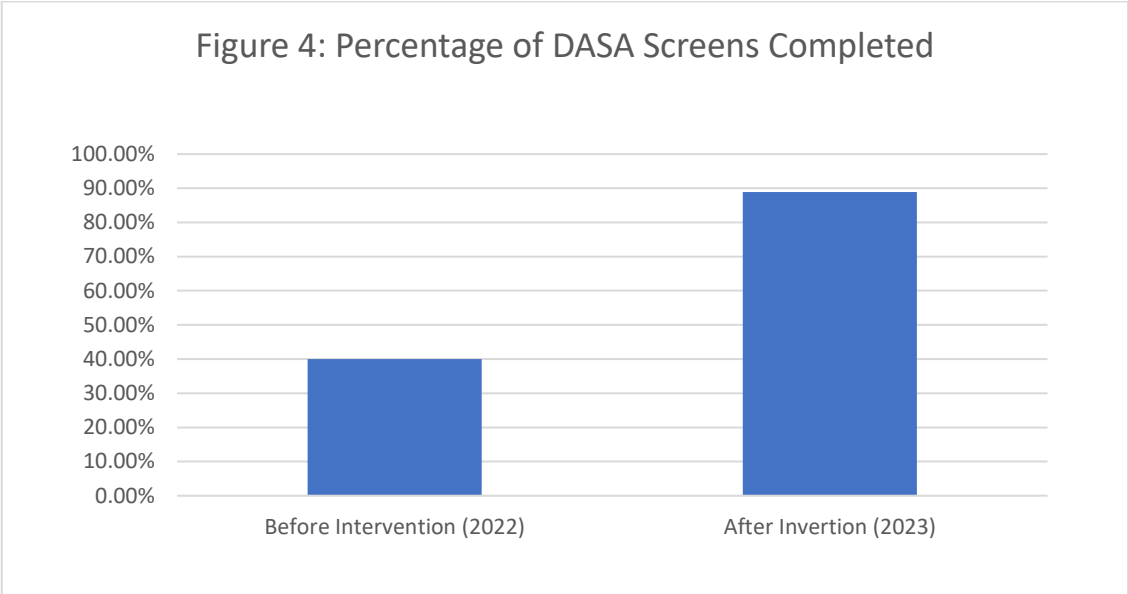


Figure 3: Alternative Measures Used Per-Restraint Episode Post-Intervention (2023)





Discussion

The findings of this QI project emphasize the importance of staff education. Nurses on an inpatient psychiatric unit hold the responsibility of initiating restraints and discontinuing them. Because of this, an educational session with a knowledge assessment for all nurses on an inpatient unit is a powerful way to begin the process of decreasing restraint times. As the literature suggests, screening tools for risk assessment, increased monitoring, and emphasis on alternative measures can contribute to lower restraint times if nurses are properly educated on these concepts. Though the increase in alternative measures used and screening tools completed were not statistically significant due to the low sample size in the post-intervention cohort, the overall average length of restraint times did have a significant decrease post-intervention.

The main takeaway of this QI project is that decreasing restraint times and instances should begin with nursing staff education. Screening tools and emphasis on alternative measures should be offered as ways to help avoid restraint episodes, but they may not be used or completed frequently if their importance is not regularly reemphasized to staff nurses. Projects aiming to decrease restraint times on an inpatient psychiatric unit in the future should use similar educational tools with an equal amount of time in months before and after the intervention to allow for more significant data to be gathered.

Limitations

It should be noted that the data from 2023 is only for four months. Because of this, there is less power in comparing the data to the 2021 and 2022 years. The data can be also affected by the acuity of patients on the unit during the post intervention months. It is possible that the effects overtime from this intervention may be diluted as more time passes. Notably May 2023 had the most restraint usage in the post-intervention cohort. There could be multiple reasons for

this, qualitatively the unit was very acute at the time with multiple agitated patients, although it is possible that the effects of the educational course in January could have been attenuating over time.

Furthermore, the data may change with a larger sample as time passes and more restraint episodes occur. Ideally, for the project to have lasting effects, the educational sessions and handouts should be utilized by management on an annual basis. Additionally, the educational session was only provided to day shift nurses. For better results, the session should be provided for night shift nurses as well. Finally, the MRNs of those patients restrained in 2021 were unavailable, so DASA screening tool use and alternative measure data could not be gathered for 2021.

Conclusion

This project, while limited in its sample, does suggest that an educational intervention was successful in reducing restraint times on an inpatient psychiatric unit. The data suggests that pre and post-test distribution along with a handout containing information regarding use of alternative measures, use of the DASA screening tool for aggression risk, and increased RN monitoring for earlier restraint discontinuation can ultimately help decrease total restraint times on an inpatient psychiatric unit. The hope is that similar interventions going forward will continue to amplify these preliminary results.

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Appendix

The Importance of Decreasing Restraints

Self-assessment for Nursing Staff on 3 North

1. How often should a DASA screen be completed?

- A. Only if a patient has a history of aggression
- B. Once at admission and once every shift, for every patient
- C. At admission and once every shift, for a patient that is moderate or high risk
- D. Once at admission only

2. What is the unit goal for restraint minutes?

- A. Less than 100 minutes per episode
- B. Less than 90 minutes per episode
- C. Less than 60 minutes per episode
- D. Less than 30 minutes per episode

3. Which of the following are examples of alternative measures to restraints? (select all that apply)

- A. Decrease stimuli by moving patient to a quieter area, such as room or open seclusion

B. Allow patient time to vent but also set limits

C. Offer PO medication or administer IM medications for agitation

D. Place patient in seclusion room and close the door

E. Escort patient to room and close the door, only allowing pt to exit if they are calm

4. Which is not a correct response regarding required documentation for a restraint event?

A. Document alternative measures and de-escalation methods used in a patient event note in Cerner

B. Add and fill out a restraint/seclusion treatment planning form to the paper care plan

C. Make a copy of the debriefing form and restraint safety round sheet and place one in the patient chart and one in the restraint/seclusion binder

D. Complete an RL solutions (incident report) on the event

E. Make sure a face-to-face is documented within 1 hour

5. Adequate reasons to utilize restraints include

A. Verbal threats

B. Physically assaulting staff

C. Self-harming behavior, not responsive to redirection

D. Yelling or disruptive behavior

E. None of the above

6. True or False: RN monitoring/rounding more frequently than every hour could contribute to shorter restraint times

A. True

B. False

7. Name three possible negative outcomes of restraint

1. injury

2. psychological trauma

3. staff injury

8. Where can you find the DASA screening tool?

A. Under IView/I&O

B. Under the Restraints Information tab

C. in AdHoc under Nursing Care

D. In the restraint/seclusion binder

Documentation and Increased Monitoring

Be Sure to utilize the Violent/Destructive Restraint and Seclusion Charting Checklist located on the back wall of the conference room. Include a complete description of the events leading up to seclusion/restraint in the patient event/condition change tool in AdHoc. This note describes behaviors that put the patient at risk of harm and less restrictive measures used before the decision to restrain.

Be sure to add a Restraint/Seclusion Problems form to the patient's treatment plan if they score as a

high risk on DASA screen or require seclusion/restraint during hospitalization. Increased RN monitoring of restrained patients significantly decreases restraint total times (Allen et al.,

2019). Therefore, nurses should discontinue restraints as soon as the patient is calm, ideally within one hour.

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Minimizing Restraints



PREVENTION OF RESTRAINTS CAN LEAD TO FEWER PATIENT AND STAFF INJURIES

DE-ESCALATION TECHNIQUES, PRIORITIZING PRN MEDICATIONS FOR AGGRESSION, AND EARLY RISK IDENTIFICATION CAN LEAD TO FEWER RESTRAINT EPISODES AND DECREASED LENGTH OF RESTRAINT TIMES.

**Maria Siegel, BSN, RN
Student DNP APRN, PMHNP**

**Special thanks Mariah Mansfield &
Arthur Oliva**

The Dynamic Appraisal of Situation Aggression (DASA)

This screening tool categorizes a patient as low, medium or high risk for aggression and will alert staff that the patient is high risk upon opening the chart.

The scale has repeatedly exhibited good-to-excellent predictive accuracy for aggression with good internal consistency and interrater reliability (Lantta et al., 2016).

Staff should ensure that each newly admitted patient has a DASA screen filled out in Form Browser by EPS. If not, one should be completed. The screening tool can be found in AdHoc under the Nursing Care Tab.

This will help alert staff to the potential for aggressive behaviors, and staff can intervene early to prevent restraint episodes.

De-escalation and Alternative Measures

* Address the patient's needs based on the situation but also set limits.

* Alternative measures can include use of psychotherapies, decreasing sensory stimuli, allowing the participation of patients in their own care, allowing for venting, and use of medications for agitation (Fernández-Costa et al., 2020).

Understanding and empathizing with patients helps prevent unnecessary restraint episodes



Restraint episodes can cause discomfort, injury, death, feelings of fear, anxiety, and neglect; and triggering past traumatic events (Goulet & Laurie, 2017)

Restraints have been shown to affect as many as 23% mental health inpatients, and as high as 45% out of those restrained will have a post-traumatic stress reaction (Thorn et al.,

2015)



Note, the above brochure was made in this format to be printed out front to back and folded into three sections. Therefore, the left most section of page 29 was the first leaflet of the brochure, with the middle section of that same page being the last leaflet. The right most section of page 29 was the second leaflet. On page 30, the third leaflet was the right most section, the fourth leaflet the middle, and the fifth the left most.