Implementation of a Behavioral Pain Scale for Traumatic Brain Injured Patients

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Problem

- Patients with traumatic brain injury present with atypical pain behaviors and decreased levels of consciousness that hinder effective pain assessments
- Ineffective pain assessment practices can lead to inadequate pain management and poor outcomes
- Current guidelines recommend using the Behavioral Pain Scale (BPS) in patients with traumatic brain injury
- Compliance with pre- and post-administration pain score documentation of a neurotrauma critical care unit were below organizational benchmarks ranging from 22 – 71%
- Anecdotal reports from nursing staff found dissatisfaction and improper use of current pain scales in patients with traumatic brain injury

Purpose

- The purpose of this project was to implement the Behavioral Pain Scale to promote accurate pain assessment practices in a neurotrauma critical care unit
- Short term goals included education and application of the Behavioral Pain Scale for traumatic brain injured patients who are mechanically ventilated
- Long term goals included improvement of pain assessments, increased documentation compliance, and usability testing of the Behavioral Pain Scale

Methods

- Setting: A neurotrauma critical care unit of a Level 1 Trauma Center in a large urban academic medical center
- Population: Adult patients with traumatic brain injury who are mechanically ventilated, admitted to the neurotrauma critical care unit, and unable to self-report
- Measure: BPS is a 3-item scale, scores range from 3 – 12

Implementation Procedures

- A nurse-driven team entitled, the “Brain Pain Squad,” led implementation of this quality improvement project
- Nurses were educated during scheduled shifts on the Behavioral Pain Scale, its components, and score interpretation as well as pain documentation standards with hands-on application of the scale
- Promotional signage and handouts were readily available
- Recognition events occurred during operationalization
- Presentations at staff meetings and weekly email reminders called, “Brain Pain Project Pearls” enhanced education and updated staff on project progress
- Data collection methods included weekly compliance rates of pre- and post-administration pain scores as well as usage of the Behavioral Pain Scale
- Usability testing took place after a nine-week implementation period via electronic staff survey

Implementation

Review of Evidence

Atypical pain behaviors of patients with traumatic brain injury include:

- Eye opening/tightening
- Limb flexion
- Coughing/increased ventilatory alarms

Education and Implementation of the Behavioral Pain Scale

Item	Description	Score
Facial expression	Relaxed	1
	Partially tightened (e.g., brow lowering)	2
	Fully tightened (e.g., eyelid closing)	3
	Grimacing	4
Upper limbs	No movement	1
	Partially bent	2
	Fully bent with finger flexion	3
	Permanently retracted	4
Compliance with ventilation	Tolerating movement	1
	Coughing but tolerating ventilation for most of the time	2
	Fighting ventilator	3
	Unable to control ventilation	4

Usability Testing with the System Usability Scale

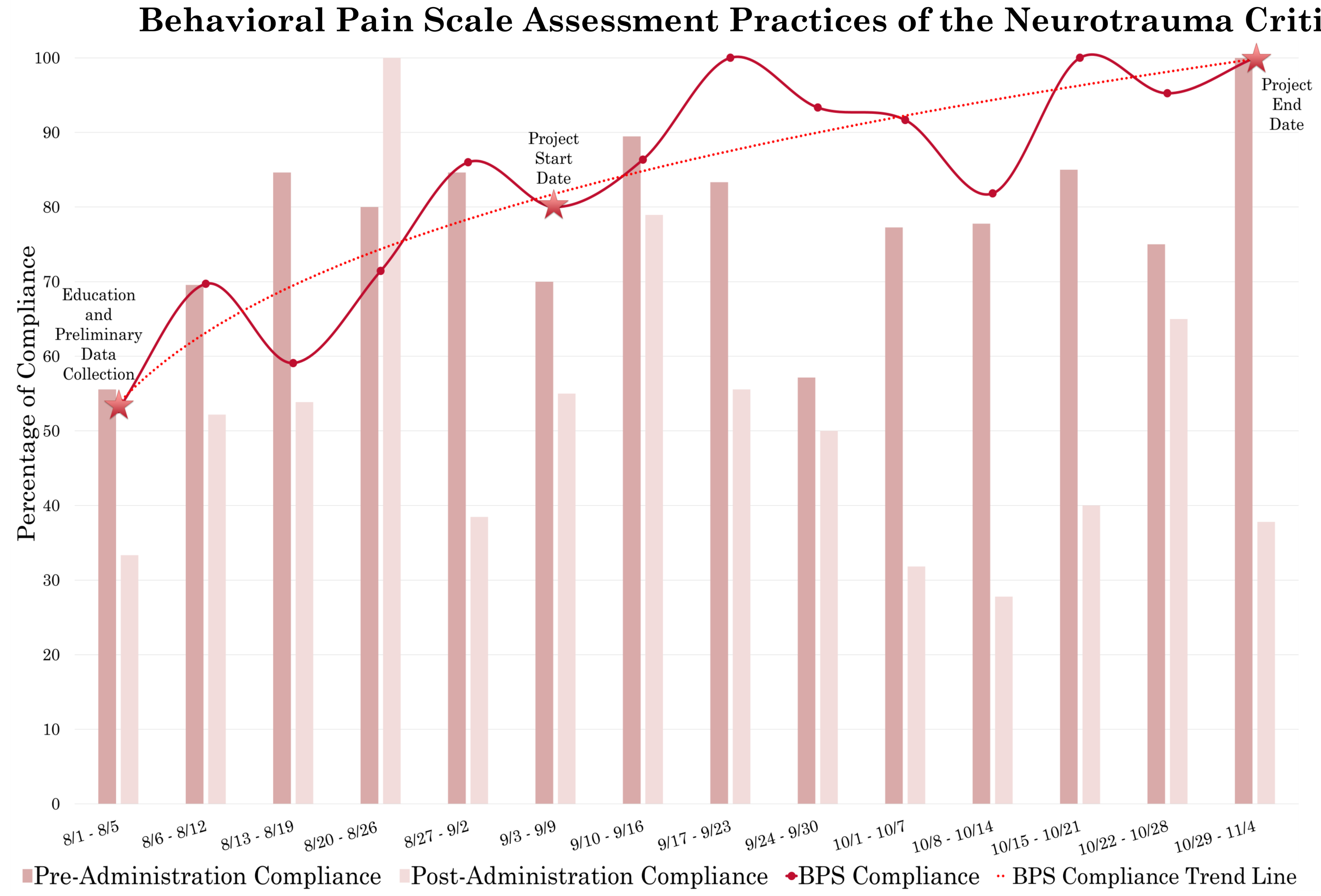
Modified System Usability Scale (SUS)

		Strongly Disagree 1	2	3	4	Strongly Agree 5
1	I think that I would like to use the BPS frequently.					
2	I found the BPS unnecessarily complex.					
3	I thought the BPS was easy to use.					
4	I think that I would need the support of a technical person to be able to use the BPS.					
5	I found the various functions of the BPS were well integrated.					
6	I thought there was too much inconsistency in the BPS.					
7	I would imagine that most people would learn to use the BPS very quickly.					
8	I found the BPS very cumbersome to use.					
9	I felt confident using the BPS.					
10	I needed to learn a lot of things before I could get going with the BPS.					

Comments:

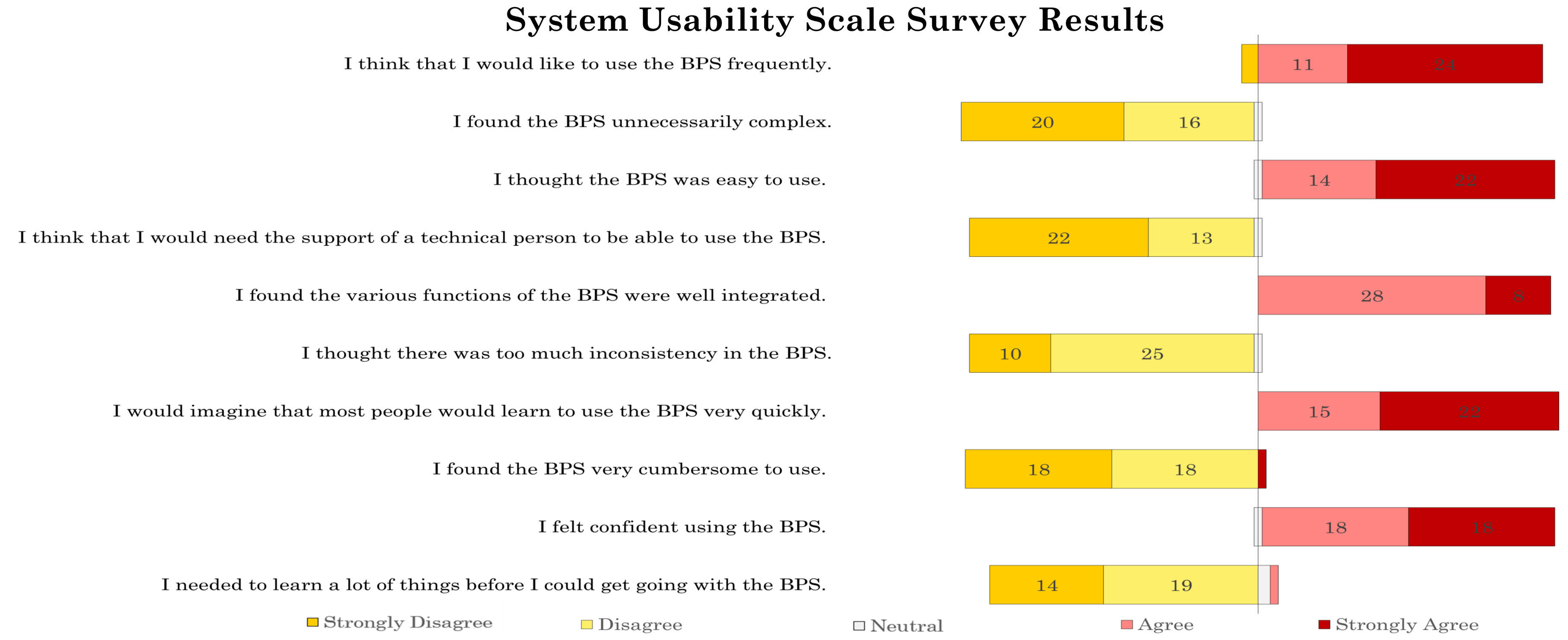
Results

Behavioral Pain Scale Assessment Practices of the Neurotrauma Critical Care Unit



	Preliminary Data	Project Data
# of Administrations	113	272
Weeks of Data	5	9
Behavioral Pain Scale Compliance		
Average	68%	92%
Range	53 – 86%	80 – 100%
Pre-Administration Compliance		
Average	75%	79%
Range	56 – 85%	57 – 100%
Post-Administration Compliance		
Average	56%	49%
Range	33 – 100%	28 – 79%

System Usability Scale Survey Results



# of Responses:	37	**Average Usability:**	86 (Excellent)
Response Rate:	74%	**Usability Range:**	65 – 100

Discussion

- During the nine-week implementation period, the Behavioral Pain Scale was readily adopted by nursing staff with an average compliance of 92%
- Results from the system usability survey of staff indicated excellent usability of the Behavioral Pain Scale with an overall score of 86, further supporting the validity and reliability associated with this tool
- During the project implementation period, pre-administration compliance improved by 4%, whereas, post-administration compliance declined by 7%
- Variations in pre- and post-administration compliance rates may be due to discrepancies between practice, policy, and data collection methods regarding pain assessment standards of the organization
- Limitations included electronic health record restrictions for pain assessment reminders and inability to use the Behavioral Pain Scale on non-intubated patients

Conclusions

- A nurse-driven team and formal education plan led to the successful implementation of the Behavioral Pain Scale and minor improvements of pre-score pain assessment documentation compliance in traumatic brain injured patients who are mechanically ventilated
- Project results aligned with current evidence, indicating that critical care units caring for the neurologically impaired should consider instituting the Behavioral Pain Scale to assess pain in this unique patient population
- Additional staff education on pain documentation standards and better functionality of the electronic health record are needed to increase compliance
- Future opportunities include development of data collection methods that match organizational policy and best practice standards as well as exploration of the Behavioral Pain Scale for non-intubated patients

References

- To access the references used for this quality improvement project, please scan the following QR code:

Acknowledgements

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