

Using the Behavioural Activity Rating Scale as a Vital Sign in the Psychiatric Emergency Service

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Abstract

Introduction: Psychiatric emergencies constitute over 12% of emergency department visits. Standardized measures like the Behavioural Activity Rating Scale (BARS) assist clinicians in more quickly identifying and treating agitation. We anticipated that introducing the BARS in a psychiatric emergency service (PES) would help staff assess patient agitation, initiate treatment, and feel safer in their workplace.

Methods: Staff, behavioral health technicians, nurses, and physicians were trained on the use of the BARS and encouraged to use it when reporting vital signs. The team was encouraged to initiate treatment if a patient's BARS suggested increased hyperactivity (score >4). Ongoing education reinforced use of the BARS. Before and 1 year after the introduction of this program, all PES staff were surveyed as to their use of the scale and perceptions of unit safety.

Results: Twenty staff completed the pre-survey, and 21 staff completed the post-survey. All respondents felt familiar with the BARS, and the use of the BARS was common both before and after implementation (55% versus 75%, $p=.13$). After implementation, more staff felt that the PES was a safe unit (85% versus 100%, $p=.03$). Staff's reported use of the scale correlated with their understanding the scale ($p=.004$) and finding it helpful ($p=.003$).

Discussion: This education and training intervention was associated with improved perceptions of safety in a PES. Use of the BARS was feasible in this emergency department setting, and staff found the measure helpful for patient care. We advocate for wider use of behavioral assessments in emergency settings.

Introduction

Improving mental health care in the emergency department (ED) is an increasingly urgent issue. With a decline in inpatient psychiatric capacity and the outpatient mental health system "in tatters," emergency rooms have become "epicenters for psychiatric and behavioral emergencies."¹ More than 12% of annual emergency department visits are for psychiatric reasons.¹ Moreover, psychiatric diagnoses are disproportionately represented among patients with frequent ED utilization. Lengths of psychiatric stays in the ED have increased, and specialized emergency psychiatric staff are often lacking.¹

Standardized behavioral health scales improve the treatment of patients with psychiatric emergencies.² By allowing the rapid assessment of behavioral health emergencies, including by general medical providers, scales improve diagnosis and hasten appropriate

treatment.³ However, the lack of agreement as to particular scales or implementation strategies has hindered wide adoption among emergency departments.⁴ Implementation has also been slowed by sensitivity to the risk of demoralization among ED staff who grow frustrated by trouble-shooting new initiatives and accommodating new protocols in fast-paced ED workspaces.⁵

The increasing volume and acuity of behavioral emergencies in EDs increase the risks of working in an already dangerous environment. Almost 25% of emergency room nurses have experienced physical violence.⁶ Experiencing aggression and verbal abuse is even more common.⁷ Perceptions of safety among staff are less correlated with rates of occupational injury than the adequacy of environmental precautions and team communication.⁸ Despite their dangerous jobs, staff who feel their safety concerns are acknowl-

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edged and are confident in managing behavioral emergencies feel safer at work.⁸

We anticipated that a standardized behavioral health measure would help staff feel more capable in assessing patient agitation and initiate treatment more quickly. Better recognition of patient agitation might also help staff feel safer in the workplace.

The conceptual model for this program is illustrated in Figure 1. This quality improvement project introduced the use of the Behavioural Activity Rating Scale (BARS) as a vital sign in a psychiatric emergency service. We evaluated both the BARS' acceptability among staff, and improvements in perceived unit safety.

Methods

Setting

This quality improvement project was conducted in a psychiatric emergency service (PES) at a county hospital with a level 1 trauma designation and an emergency department with approximately 60,000 annual patient visits. The PES is a physically separate, secure space adjacent to the emergency department; all patient rooms may be used for restraint or seclusion if necessary. The nursing station is separated from the patient milieu by glass and lockable doors. PES staff include behavioral health technicians, nurses, physi-

cian assistants, social workers, students and residents, and attending psychiatrists.¹ Attending psychiatrists are present 24 hours a day.

Behavioural Activity Rating Scale

Shown in Table 1, the BARS is a single item, clinician-administered measure to assess agitation.⁹ A clinician score of 4 reflects a "normal level of activity." Higher scores (5-7) reflect increasing hyperactivity, while lower scores (1-3) reflect lower levels of activity or sedation. The BARS was developed for clinical trials assessing the efficacy of intramuscular antipsychotics for acute agitation. The BARS has almost perfect interrater reliability (.99) and is moderately correlated with scores on both the Clinical Global Impression of Severity and the Positive and Negative Syndrome Scale agitation cluster.¹⁰ However, the BARS is faster to administer and more sensitive to rapid changes in behavioral agitation than those scales.¹⁰

Program Intervention

All PES staff were trained on the use of the BARS, which was posted prominently throughout the PES. Training included journal clubs for staff and trainees. Attending physicians emphasized use of the BARS when inquiring about patients' status. BARS scores were charted every time vital signs were checked—typically, on admission, every 4 hours, and on discharge. In the chart, BARS scores were recorded adjacent to the vital signs. Nurses alerted physicians to any routine BARS scores of 5 or greater that treatment may be considered. Subsequent to treatment, including verbal de-escalation or medication administration, nurses reported changes in BARS scores. Charge nurses reported scores during team huddles and reinforced their use among nurses for patient hand-offs. The intervention was limited to the PES and did not include the medical service.

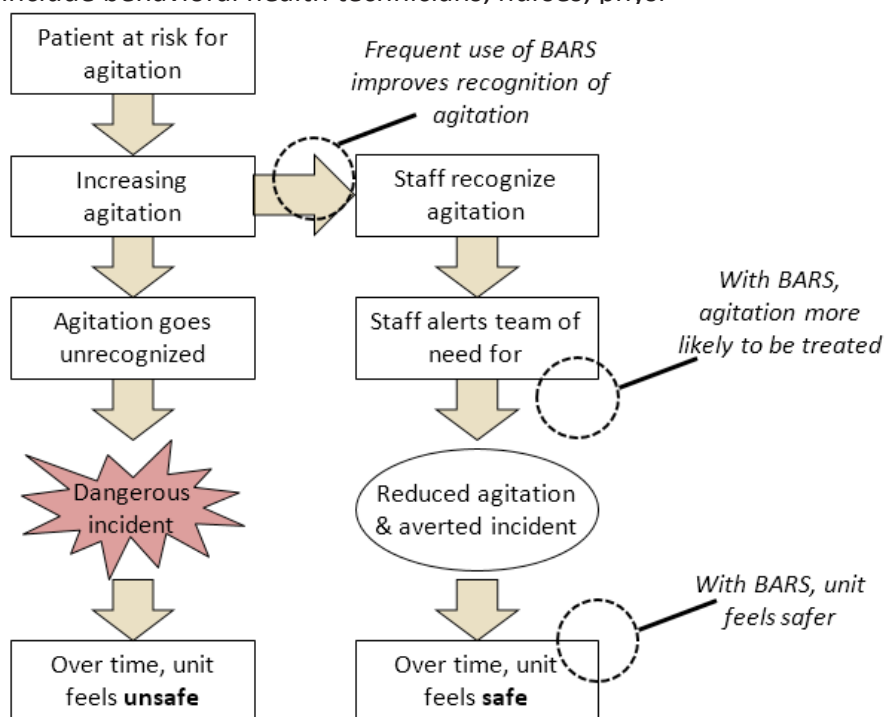


Figure 1. Conceptual model for using BARS as a vital sign

Program Assessment

Prior to implementation, the authors (MP and KN) developed a 10-question staff survey to assess the benefit of this program change. The survey was emailed to all PES staff through SurveyMonkey immediately after initial training. Survey questions are listed in Table 2. Respondents were asked their agreement with statements using a 4-point rating measure: (1) "Strongly disagree," (2) "Disagree," (3) "Agree," and (4) "Strongly agree." The BARS was then applied in clinical practice. One year later, the same survey questions were emailed to all PES staff as a post-implementation survey. All responses were anonymous. This activity was an approved quality improvement project.

Analyses

Responses were analyzed as ordinal variables, and choice of correlative tests was based on a published algorithm.¹¹ Wilcoxon rank-sum tests (z) were used to compare pre- and post-intervention responses from related groups. As a quality improvement project, there were no a priori power calculations, and these analyses were not adjusted for multiple comparisons. Kendall's rank correlation efficient (r_t) was used to assess for correlation among responses and adjusted for multiple comparisons. Because there were so few responses, pre- and post-responses were grouped for correlations. All statistical analyses were applied using the 4-point response scale. For clarity, we report the percentage of respondents answering "Agree" or "Strongly agree" to statements. Analyses were conducted using StataSE 14.0 (StataCorp, College Station, TX).

Results

Twenty staff members responded to the pre-implementation survey (49% response rate from 41 staff). Twenty-one staff members responded to the post-intervention survey (51%). Data regarding respondents' roles and demographics were not collected. Among all received surveys, only 3 items (0.7%) were incomplete.

After 1 year of using BARS as a vital sign, more staff agreed with the statement, "I feel the PES is a safe unit" than prior to implementation (100% versus 85%, respectively, $z=-2.22$, $p=.03$). There was no statistically-significant change from pre-implementation to

post-implementation in staff feeling that their concerns regarding agitation were being acknowledged, that the team addressed agitation rapidly, or that patients were appropriately medicated for agitation.

Prior to implementation of the quality improvement initiative, 100% of respondents reported understanding the BARS, 55% reported using the scale to assess agitation, and 55% reported communicating BARS scores to other staff. There was not a statistically-significant increase in reported use or communication of BARS scores. Table 2 describes the survey content, responses, and statistical differences between the pre-and post-surveys.

Agreement with "I feel PES is a safe unit" was correlated with responses to, "My concerns, regarding patient agitation, are acknowledged by the team" ($r_t=.34$, $p=.005$). In turn, feeling acknowledged was correlated with feeling that the team "addresses agitation rapidly" ($r_t=.35$, $p=.003$) and "patients get appropriately medicated" ($r_t=.32$, $p=.02$).

Use of the BARS was correlated with staff understanding the scale (statement 8, $r_t=.33$, $p=.004$) and finding it helpful (statement 7, $r_t=.40$, $p=.003$).

Discussion

After using the BARS as a vital sign for 1 year, more PES staff felt their unit was safe. Most staff found the BARS helpful and used it for communicating the severity of patient agitation. When survey results from the pre- and post-implementation assessments were combined, staff perception of unit safety was greater when staff felt patient agitation was acknowledged through provision of rapid treatment including medications.

This project demonstrates the integration of frequent, standardized behavioral assessments into emergency care. Agitated behavior is dynamic, changing throughout the course of an ED stay and requiring repeated re-evaluation. Early identification of patients at risk for behavioral decompensation provides opportunities for early de-escalation before adverse outcomes, including restraint and seclusion.^{12,13} That the use of the BARS as a vital sign was well-accepted by staff in this study demonstrates how this strategy is feasible for busy, high-risk clinical environments.

There are probably multiple mechanisms by which this program inculcated a sense of safety. Concerns

regarding agitation were recognized by leadership's implementation of a program for ongoing assessment. Staff also felt they could quickly and readily communicate a patient's increased activity level. An expectation that the BARS would be frequently reported encouraged increased dialogue with physicians about the need for pre-emptive assessment and treatment.

For most items, responses were not different after implementation. There are several possible reasons for this lack of change. At baseline, all respondents reported feeling comfortable with the BARS and de-escalation. Most respondents also felt that the unit was safe and that agitation was quickly addressed. Thus, it was difficult to detect improvement from these baseline scores. In addition, respondents may have already been perceiving the benefits of using the BARS by the time of the pre-survey as they had already been trained in its use. Because participation was voluntary, respondents may have largely been comprised of staff who are motivated to improve agitation treatment or participate in educational programming. These staff might report greater comfort with de-escalation, feel safer in the milieu than non-respondents, and be less likely to experience improvement in these measures—thereby biasing results towards the null. Repeated measurements may have shown a greater effect size by reinforcing the use of the BARS (through reminders to staff), encouraging higher participation rates, and reducing the risk of experimental mortality. That our response rate was only modest increases the risk of type II error.

This project has several limitations. Responses may vary by respondents' roles, which were not collected.

We can only report staff's reported perceptions; clinical outcomes such as the frequency of medication administration or restraint episodes were not available. Finally, the pre- and post-intervention design may not account for other variables affecting responses, including changes in personnel, staff experience, and external trainings. There were no other major changes to educational programming during the project period that might have affected our outcomes. As a quality report on the implementation of one program, these results are not generalizable.

Frequent behavioral assessment in the emergency department holds promise for future clinical practice and research. Applying the BARS or similar measures regularly in the emergency department will allow a better appraisal of the benefits of medications, environmental enhancements, and verbal de-escalation strategies. Furthermore, standardized assessments better enable non-psychiatric providers to recognize behavioral emergencies. By making it simpler to describe complex psychiatric presentations, standardized measures like the BARS may reduce errors and improve patient and staff safety.¹⁴

Acknowledgements

Previous Presentations

Some of this work was presented at the National Update on Behavioral Emergencies conference in Las Vegas, NV, December 2-4, 2015.

Tables

Table 1. Behavioural Activity Rating Scale (BARS)^a

1	Difficult or unable to arouse
2	Asleep but response normally to verbal or physical contact
3	Drowsy, appears sedated
4	Quiet and awake (normal level of activity)
5	Signs of overt (physical or verbal) activity, calms down with instructions
6	Extremely or continuously active, not requiring restraint
7	Violent, requires restraint

Table 2. Differences in responses to pre- and post-intervention surveys

Statement	Pre-survey (% agree or strongly agree) (n=20)	Post-survey (% agree or strongly agree) (n=21)	z	p
S1. I feel, as a staff member, safe on the unit.	80	90	-1.28	.20
S2. I feel PES is a safe unit.	85	100	-2.23	.03
S3. My concerns, regarding patient agitation, are acknowledged by the team.	84 ^B	90	-1.63	.10
S4. The team addresses agitation rapidly.	80	95	-1.44	.15
S5. I feel comfortable using de-escalation techniques.	100	100	-1.07	.28
S6. I feel agitated patients get appropriately medicated.	79 ^B	62	0.16	.87
S7. A uniform agitation scale (such as the BARS) is helpful.	5	76	-1.09	.28
S8. I understand the BARS scale.	100	100	-0.54	.59
S9. I use the BARS scale to assess agitation	55	75 ^C	-1.51	.13
S10. I communicate BARS scores to the team.	55	71	-1.22	.22

^A Respondents were asked to rate their agreement with statements:

1—Strongly disagree, 2—Disagree, 3—Agree, 4—Strongly Agree

^B Due to missing data, n=19

^C Due to missing data, n=20

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