Published in final edited form as:

Crit Care Med. 2013 August ; 41(8): 1976–1982. doi:10.1097/CCM.0b013e31828a40ba.

Diverse Attitudes to and Understandings of Spontaneous Awakening Trials (SAT): Results from a Statewide Quality Improvement Collaborative

Melissa A Miller, BSN, MD, MS,

Clinical Assistant Professor, Pulmonary and Critical Care Medicine, University of Michigan, 1500 E. Medical Center Drive, TC 3916, Ann Arbor, MI 48109, melmille@umich.edu, Phone: (734) 936-5047, Fax: (734) 936-5048

Sarah L Krein, PhD, RN,

Research Investigator, Ann Arbor VA HSR&D Center of Excellence, Research Associate Professor, Department of Internal Medicine, University of Michigan, 2215 Fuller Road (152), Ann Arbor, MI 48105 USA

Christine T George, MS, RN,

Director National Projects, Michigan Health and Hospital Association, 110 W Michigan Ave # 1200, Lansing, MI 48933

Sam R Watson, MSA, MT,

Senior Vice President Patient Safety and Quality, Michigan Health and Hospital Association, MHA Keystone Center, 110 W Michigan Ave # 1200, Lansing, MI 48933

Robert C Hyzy, MD, and

Associate Professor of Internal Medicine, Pulmonary and Critical Care Medicine, University of Michigan, 1500 E. Medical Center Drive, TC 3916, Ann Arbor, MI 48109

Theodore J Iwashyna, MD, PhD

Assistant Professor of Internal Medicine, Pulmonary and Critical Care Medicine, Faculty Associate, Survey Research Center, Institute for Social Research, University of Michigan, Research Scientist, VA Center for Clinical Management Research, 3A23 300 NIB, SPC 5419, 300 North Ingalls, Ann Arbor, MI 48109

Abstract

Objective—Spontaneous awakening trials (SATs) improve outcomes in mechanically ventilated patients, but implementation remains erratic. We examined variation in reported practice, prevalence of attitudes and fears regarding SATs, and organizational practices associated with routine implementation of SATs in an ICU quality improvement collaborative.

Design—Written survey.

Setting—Michigan Health and Hospital Association's Keystone ICU, a quality improvement collaborative of 73 hospitals.

Subjects—Attendees of the yearly Keystone ICU meeting, January 2011, including nurses, physicians, hospital administrators, and other healthcare professionals.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Intervention—Respondents were asked about institutional characteristics, SAT practice, attitudes and barriers regarding SATs, and organizational cultural characteristics that might influence SAT practice. The association of organizational cultural characteristics and attitudes with reported SAT use was evaluated using logistic regression.

Measurements and Main Results—319 participants attended the meeting. The survey response rate was 83.4%. Respondents reported wide variation in approach to SAT performance and patient selection. 48.6% of respondents reported regular SAT use, defined as >75% of mechanically ventilated patients undergoing SATs each day. In bivariable analysis, addressing sedation goals routinely in rounds and having SATs as part of unit culture were positively associated with regular SAT use, while the perception that SATs increased short term adverse effects, staff fears of SATs, and the perception that SATs are hard work were negatively associated with regular SAT use. In multivariable analysis, only addressing sedation in rounds (OR 2.85 [95% CI 1.55–5.23]), incorporation of SATs into unit culture (OR 3.36 [95% CI 1.75–6.43]), and the perception that SATs are hard work (OR 0.53 [95% CI 0.30–0.96]) remained statistically significantly associated with regular SAT use. Respondents in managerial positions were less likely to perceive SATs as hard work (OR 0.44 [95% CI 0.22–0.85]).

Conclusion—Even in a motivated state-wide quality improvement collaborative, SAT practice varies widely and concerns persist regarding SATs. Cultural practices may counteract the effect of concerns regarding SATs and are associated with increased performance of this beneficial intervention. Patient selection should be a focus for continuing medical education. Differences in perception of work between management and staff may also be a focus for improved communication.

MeSH Keywords

Organizational Culture; Conscious Sedation; Intensive Care; Mechanical Ventilators

Introduction

Spontaneous awakening trials (SATs), or the daily cessation of sedative drips, have been shown to improve outcomes and decrease length of ICU stay.(1, 2) When combined with spontaneous breathing trials, they have been associated with a decrease in one-year mortality.(1) SATs are also the essential first step in a multidisciplinary approach to early ICU mobilization, which has been shown to decrease ventilator days and delirium, and significantly increase the number of patients returning to independent function at hospital discharge.(3–5)

Implementation of SATs should be simple, as they require only cessation of continuous intravenous sedation and monitoring of the patient, and are low cost, as they require no additional equipment and could actually decrease sedative doses.(2) However, despite strong evidence, lack of expense, and support from prominent critical care guidelines, such as the Surviving Sepsis Campaign(6) and the ventilator bundle proposed by the Institute for Healthcare Improvement (IHI),(7) implementation of SATs is far from ideal. A review of a decade of international studies found that between 1–78% of physicians reported using SATs, and most physicians who indicated they used SATs reported doing so only in a portion of their patients.(8) Moreover, a recent survey revealed that only 44% of ICU professionals acknowledged they implement daily sedation interruption on a majority of ICU days,(9) while another study identified the lack of a physician order or lack of nursing acceptance as a major barrier to SATs.(10) A study of ICU nurses suggested that experience and education with SATs and individual patient characteristics influence nurses' willingness to perform SATs.(11) In our own previous qualitative work we found wide variation in reported SAT practice among physicians, nurses, and respiratory therapists in one unit,(12)

and concerns by participants regarding patient safety and discomfort that appeared to inform SAT practice.(13)

Despite this prior work, however, our understanding of how SATs are implemented in clinical practice as well as underlying barriers and motivators to practice use or acceptance is still limited. This has become particularly important in light of recent results questioning the benefits of SATs, albeit in the setting of lower SAT compliance than previous trials.(14) The objective of this study was to investigate ICU practitioners' knowledge and practice of SATs across a diverse set of hospitals participating in a Michigan Health and Hospitals Association (MHA) Keystone ICU quality improvement collaborative. We also sought to investigate attitudes, barriers, and organizational cultural characteristics associated with regular use of SATs.

Materials and Methods

Study Design and Sample

We administered a written survey to 319 representatives of 73 hospitals attending the January 2011 annual meeting of the MHA Keystone ICU initiative, a quality-improvement collaborative focusing on improving outcomes in Michigan ICUs whose previous notable successes include a now widely disseminated approach to reducing central line-associated blood stream infections. (15) Attendees included staff nurses, nurse managers, nurse educators, clinical nurse specialists, physicians, hospital administrators, respiratory therapists, pharmacists and other professionals from institutions participating in the MHA Keystone ICU collaborative. SATs were included in the ventilator bundle introduced in 2004. Renewed emphasis was placed on sedation and SATs at the January 2010 MHA Keystone ICU meeting based on the results of the "Awakening and Breathing Controlled Trial,"(1) as a necessary first step toward an early mobility initiative.(3) The 2011 survey was part of MHA Keystone's ongoing quality improvement efforts to understand its members' practices. Survey items focused on knowledge of SATs, reported sedation and SAT practice, and attitudes and barriers toward SATs based on our previous qualitative work.(12) The survey instrument was tested prior to administration for internal validity by administering to members of several different disciplines. Cognitive interviewing was performed to assure clarity of survey items.(16) Analysis of the data for research purposes was approved by the University of Michigan Medical Center Institutional Review Board (HUM00051079).

Measures

Description of practice—Respondents were asked to choose the response best describing their treatment of sedative drips during SATs—turning off the drips completely, weaning them slowly, or individualizing the approach to each patient. A similar question was asked regarding treatment of analgesic drips. Respondents were also asked to identify goals of the SAT from a list of five possible responses, which had emerged during prior qualitative work,(12) and encouraged to select all that applied. The five reasons were to minimize the dose of sedation, to facilitate ventilator weaning, to perform a neurologic exam, to reduce ICU length of stay, and to assess pain and discomfort. Finally, respondents were asked to choose appropriate exclusion criteria from a list of possible criteria. Exclusion criteria, both correct and incorrect based on published studies,(1, 2) were listed as options and respondents were asked to choose appropriate criteria.

Outcome variable—Respondents were asked what percentage of mechanically ventilated patients undergo SATs each day, <10%, 11–25%, 26–50%, 51–75%, and 76–100%. Regular SAT use was defined as > 75% of patients undergoing SATs each day.

Institutional and individual variables—Respondents were asked to identify their professional role in the unit. Those who identified themselves as medical directors, hospital administrators, and nurse managers were classified as having a managerial position. Respondents were asked if their unit or hospital had an association with a medical school, residency or house officers, critical care fellows, or other academic affiliation. Institutions were classified as academic if any of these criteria were met. Respondents were also asked about unit size (i.e., number of beds), whether the unit model was closed (in which only intensivist-led critical care teams write orders), and whether intensivists made primary decisions in their units. Finally, respondents were asked if their unit had an SAT protocol in place.

Cultural and attitudinal variables—Respondents were asked how often sedation goals were addressed on rounds for mechanically ventilated patients: routinely (>70%), sometimes (20–70%), rarely (<20%), or never. Respondents were also asked to indicate their level of agreement with several statements on a 5-point Likert scale, from “strongly agree” to “strongly disagree”, including the statement, “Performing spontaneous awakening trials (SATs) is hard work.” These responses were scored 1 for positive responses (agree or strongly agree) and 0 otherwise. (see appendix for survey text)

Statistical Analysis

We conducted descriptive univariate analysis of our variables of interest as well as bivariable analysis to compare institutional, cultural and attitudinal variables with regular SAT use. Student's T-test was used to evaluate number of unit beds with SAT use, and chi-square testing was used to compare categorical variables with SAT use. Multivariable logistic regression was utilized to evaluate the association between institutional characteristics, cultural, and attitudinal variables with regular SAT use, while adjusting for other potential factors. Variables were included if their bivariable association with SAT use met a significance level of $p < 0.10$. In a few cases, two variables were deemed to measure similar characteristics (e.g. “In my opinion, during spontaneous awakening trials the patient is at higher risk for adverse events such as self-extubation” and “In my opinion, use of spontaneous awakening trials increases short-term adverse effects (even if it is worth it in the long run)”. In these cases, we included only the variable with the stronger statistical association. We also conducted two secondary analyses. Chi-square testing was used to compare professional role and the perception of SATs as hard work. Additionally, we used multivariable analysis to compare each of the goals of SATs with the approach to performance of SATs and with appropriate inclusion and exclusion criteria. These models were developed based on a priori hypotheses about which variables should be included in the model. Concerns about fit and collinearity were evaluated by reviewing the stability of coefficients and associations over time, and by checking for evidence of standard error inflation. Our final models have 6 variables for ~120 positive responses, well below the accepted minimum of 10 positive responses per explanatory variable. (17, 18) SAS 9.3 was used for statistical analysis. (Cary, NC).

Results

A total of 266 participants returned the survey, a response rate of 83.4%. Twenty-five observations were deleted due to missing data in the covariates in question; our analytic sample was 241. Respondents reported representing ICUs with a median of 18 beds (IQR 12–24) and 83.8% reported some institutional academic affiliation—association with a medical school, residency/house officers, critical care fellowship, or other academic affiliation. Only 21.6% reported having closed unit models, and 34.4% reported that intensivists were the primary decision makers for all patients.

For the primary outcome, 48.6% of respondents reported that >75% of mechanically ventilated patients underwent SATs each day, which was defined as regular SAT use. Over two-thirds (67.2%) reported that sedation goals were addressed in rounds >70% of the time. Most (89.2%) respondents reported that their unit had an SAT protocol in place, and 67.2% reported that performing SATs was part of their unit culture. Only 17.0% of respondents agreed with the statement, “In my opinion, use of SATs increases short-term adverse effects (even if it is worth it in the long run).” However, 43.6% of respondents felt that staff members in their units were often afraid to perform SATs, and 41.1% reported that performing SATs is hard work. (Table 1)

Description of Practice

Respondents reported a variety of approaches to sedation cessation, with 38.9% reporting that sedative drips should be completely turned off during SATs, 15.4% indicating that drips should be gradually decreased, and 45.7% reporting that the approach should be individualized to each patient. Treatment of analgesic drips also varied: 30.1% of respondents felt that analgesic drips should be left alone during SATs and 55.6% felt that analgesic drips should be slowly weaned during SATs while only 14.2% would stop analgesic drips with every SAT. In evaluating respondents' selection of exclusion criteria, a score from 1–9 was calculated based on the number of criteria respondents chose which were consonant with both past randomized controlled trials (RCTs) and guideline recommendations. The distribution of this score is illustrated in Figure 1. Only 12.4% of respondents selected all of and only these consonant responses. Results for the individual exclusion criteria chosen are summarized in Table 2.

A majority of respondents endorsed each potential goal of an SAT as important: to minimize sedation (84.2%), ventilator weaning (93.6%), neurologic exam (82.7%), reduce ICU length of stay (85.3%), and assessment of pain and discomfort (73.3%). However, many did not recognize the importance of all goals. (Figure 2) In multivariable analysis, there was no apparent association between the goals endorsed by an individual respondent and his or her approach to the SAT as complete vs. gradual cessation of drips, and no apparent association with his or her accuracy in identifying appropriate exclusion criteria, although our power to detect associations was limited.

Unadjusted Associations

Unadjusted associations with regular SAT use are summarized in Figure 3. Hospital and unit structural characteristics—number of beds, academic affiliation, closed ICU, or intensivist decision-making—were not significantly associated with regular SAT use. The presence of an SAT protocol had a notable odds ratio but a wide confidence interval (OR: 2.31, 95% CI: 0.97, 5.55). Having a unit culture of performing SATs and addressing sedation goals on rounds were positively associated with regular SAT use, while the belief that SATs increase adverse events, staff fears of performing SATs, and the belief that SATs were hard work were all negatively associated with regular SAT use in unadjusted analyses.

Adjusted Associations

In the multivariable model, addressing sedation goals on rounds routinely (OR 2.85 [95% CI 1.53–5.31], $p=0.001$) and identifying SAT performance as part of a one's unit culture (OR 3.11 [95% CI 1.61–3.01], $p=0.001$) were positively associated with SAT performance. The perception that SATs are hard work remained negatively associated with SAT performance (OR 0.53 [0.30–0.96], $p=0.04$). These findings are summarized in Table 3. We further evaluated whether the professional position of the respondent was associated with the perception that SATs are hard work. We found that those respondents in a managerial position (nurse manager, medical director, hospital administrator) were less likely to

perceive SATs as hard work (OR 0.44 [95% CI 0.22–0.85], $p=0.015$). The associations between presence of an SAT protocol, concerns regarding short-term adverse effects, and staff fears of performing SATs with SAT use were no longer significant in the multivariable model.

Discussion

Even among hospitals that are part of a highly motivated collaborative in which the SAT has been established as a goal, there is wide variation in reported SAT practice. Less than half of respondents reported regular SAT use, and respondents reported wide variation in patient selection, method of sedation cessation and reasons to perform SATs. Additionally, fears and concerns regarding SAT performance were identified among many members of the collaborative. After controlling for attitudes, fears, and cultural characteristics and practices, having SATs as a part of unit culture and addressing sedation goals routinely on rounds were independently associated with reported regular SAT use, while the perception that SATs are hard work remained negatively associated with regular SAT use.

Translation of SATs to regular practice remains incomplete. Clinician and patient-level data show persistent failure of performance.(8, 9, 19) Previous studies have identified difficulties in care coordination and concerns about patient safety as barriers to SAT performance,(8, 10) and suggest that experience and education increase the chances that SATs will be performed.(11) Our previous work (12) suggested that while not supported by the evidence, concerns about patient safety and distress while performing SATs are prominent in some ICU practitioners,(1, 2, 20, 21) and indeed, the present work confirms this is true even among members of a collaborative that are well-informed about SAT performance.

Furthermore, these findings suggest there is striking divergence in views about appropriate inclusion and exclusion criteria for an SAT (as defined through a review of published randomized trials and guidelines). The inaccurate selection of some exclusion criteria could contribute to the perception that SATs are unsafe while endorsement of other inappropriate exclusion criteria decreases the number of patients who may be eligible for the intervention. The lack of agreement in this study population suggests that appropriate exclusion criteria should be an integral part of education initiatives. More insidious, but perhaps more consequential, is the lack of consensus itself. An inability to agree on which patients should be included leads to a lack of standardization of practice, and can certainly undermine the outcome of SAT performance in practice, and subsequently in large pragmatic trials of SATs.

SAT performance has predominantly been approached as an individual practitioner issue, and indeed, in our study, there is wide variation in individual approaches to SATs. However, more importantly, our study also shows that organizational culture can influence self-reported SAT performance and may possibly counteract some effects of individual concerns. In our analysis, both staff fears about SATs and respondents' opinions that SATs increase adverse events decreased the chances that a respondent would report being a regular SAT user. When controlling for organizational culture variables, having SATs as part of unit culture and routine addressing of sedation goals in rounds, these fears and concerns were no longer statistically significant. This suggests the importance of the concept of unit culture, a key part of the quality improvement collaboratives approach.(22) The perception that SATs are hard work, however, remained significant. The lower level of agreement with this statement from those in managerial positions suggests a potential area for improved communication and support.

This study should be interpreted in the context of the following limitations. First, our sampling frame was intended to target thought leaders in the ICUs of the state, those attending the MHA Keystone ICU annual meeting. As such, the sample is intentionally not representative of all ICU practitioners in the state. Participants likely represent a motivated sub-cohort within the collaborative and those most knowledgeable about SAT practice and challenges associated with this intervention; our results likely represent an upper bound on the knowledge and attitudes of other ICU practitioners. Second, we report SAT use based on a survey, not a bedside audit of SAT practice. Finally, nonresponse bias is a consideration in all survey studies. Our 83.4% response rate was well above generally accepted standards for response rates in medical literature, (23) which decreases risk for nonresponse bias. Given the anonymous nature of the survey, we unfortunately have no information pertaining to the difference between responders and nonresponders that would bias the results of the survey. We can report that units were encouraged to send at least three individuals, with augmented funding from the MHA Keystone ICU collaborative. We also felt that anonymous responses would encourage more honesty in reporting attitudes, barriers, and compliance than would occur if participants felt they could be individually identified and tied to a specific unit.

Conclusions

Our findings show that even among participants in a motivated and successful state-wide quality improvement collaborative, (15, 24) SAT practice still varies widely with respect to SAT performance and patient selection. Fears and concerns regarding SAT performance, and specifically the perception that SATs are hard work, affect self-reported compliance. Two strategies, addressing sedation goals on rounds routinely and having SATs as part of unit culture were independently associated with reported regular SAT use, and may help counteract the effects of some fears regarding SAT performance.

Acknowledgments

Location and Funding: This research was performed at the University of Michigan and was funded by NIH/NHLBI T32: HL07749-17 (MAM) and K08: HL091249-03 (TJI). The sponsor was not involved with the study's design, conduct, or reporting.

Dr. Miller received support for travel to meetings for the study or other purposes from Michigan Health and Hospital Association Keystone ICU. Shge received free registration from MHA to the meeting at which the survey was administered and registration and lodging at the next annual meeting at which our results were shared with the organization. Dr. Iwashynva has received funding from NIH.

References

1. Girard T, Kress J, Fuchs B, et al. Efficacy and safety of a paired sedation and ventilator weaning protocol for mechanically ventilated patients in intensive care (Awakening and Breathing Controlled trial): a randomised controlled trial. *Lancet*. 2008; 371:126–134. [PubMed: 18191684]
2. Kress JP, Pohlman AS, O'Connor MF, et al. Daily interruption of sedative infusions in critically ill patients undergoing mechanical ventilation. *N Eng J Med*. 2000; 342:1471–1477.
3. Schweickert W, Pohlman M, Pohlman A, et al. Early physical and occupational therapy in mechanically ventilated, critically ill patients: a randomised controlled trial. *Lancet*. 2009; 373:1874–1882. [PubMed: 19446324]
4. Morris P, Goad A, Thompson C, et al. Early intensive care unit mobility therapy in the treatment of acute respiratory failure. *Crit Care Med*. 2008; 36:2238–2243. [PubMed: 18596631]
5. Morris PE. Receiving early mobility during an intensive care unit admission is a predictor of improved outcomes in acute respiratory failure. *Am J Med Sci*. 2011; 341:373–377. [PubMed: 21358312]
6. Dellinger RP, Carlet J, Masur H, et al. Surviving Sepsis Campaign guidelines for management of severe sepsis and septic shock. *Crit Care Med*. 2008; 36:296–327. [PubMed: 18158437]

7. [cited 2010 August 3] Implement the Ventilator Bundle. Five Million Lives Campaign. Available from: <http://www.ihl.org/IHI/Topics/CriticalCare/IntensiveCare/Changes/ImplementtheVentilatorBundle.htm>
8. Mehta S, McCullagh I, Burry L. Current sedation practices: lessons learned from international surveys. *Crit Care Clin.* 2009; 25:471–488. vii. [PubMed: 19576525]
9. Patel R, Gambrell M, Speroff T, et al. Delirium and sedation in the intensive care unit: survey of behaviors and attitudes of 1384 healthcare professionals. *Crit Care Med.* 2009; 37:825–832. [PubMed: 19237884]
10. Tanios M, de Wit M, Epstein S, et al. Perceived barriers to the use of sedation protocols and daily sedation interruption: a multidisciplinary survey. *J Crit Care.* 2009; 24:66–73. [PubMed: 19272541]
11. Roberts RJ. Predictors for daily interruption of sedation therapy by nurses: a prospective, multicenter study. *J Crit Care.* 2010; 25:660.e661–660.e667. [PubMed: 20447799]
12. Miller MA, Bosk EA, Krein SL, et al. Implementation challenges in the intensive care unit: The why, who, and how of daily interruption of sedation. *J Crit Care.* 2012; 27:e1–e7. [PubMed: 22227084]
13. Miller MA, Bosk EA, Krein SL, et al. Daily interruption of sedation: fear and loathing in the ICU. *Crit Care Med.* 2010; 38:A174.
14. Mehta S, Burry L, Cook D, et al. Daily sedation interruption in mechanically ventilated critically ill patients cared for with a sedation protocol: A randomized controlled trial. *JAMA.* 2012; 308:1985–1992. [PubMed: 23180503]
15. Pronovost P. An intervention to decrease catheter-related bloodstream infections in the ICU. *N Eng J Med.* 2006; 355:2725–2732.
16. Sudman, S.; Bradburn, N.; Schwarz, N. *Thinking About Answers: The Application of Cognitive Processes to Survey Methodology* (Jossey-Bass Social and Behavioral Science Series). San Francisco: Jossey-Bass; 1995.
17. Peduzzi P. A simulation study of the number of events per variable in logistic regression analysis. *J Clin Epidemiol.* 1996; 49:1373–1379. [PubMed: 8970487]
18. Harrell, FE. *Regression Modeling Strategies: With Applications to Linear Models, Logistic Regression, and Survival Analysis.* 2nd ed. New York: Springer-Verlag; 2001.
19. Kahn J, Brake H, Steinberg K. Intensivist physician staffing and the process of care in academic medical centres. *Qual Safe Health Care.* 2007; 16:329–333.
20. Kress J, Gehlbach B, Lacy M, et al. The long-term psychological effects of daily sedative interruption on critically ill patients. *Am J Respir Crit Care Med.* 2003; 168:1457–1461. [PubMed: 14525802]
21. Treggiari M, Romand J-A, Yanez ND, et al. Randomized trial of light versus deep sedation on mental health after critical illness. *Crit Care Med.* 2009; 37:2527–2534. [PubMed: 19602975]
22. Pronovost PJ. Improving patient safety in intensive care units in Michigan. *J Crit Care.* 2008; 23:207–221. [PubMed: 18538214]
23. Asch DA. Response rates to mail surveys published in medical journals. *J Clin Epidemiol.* 1997; 50:1129–1136. [PubMed: 9368521]
24. Berenholtz SM. Collaborative cohort study of an intervention to reduce ventilator-associated pneumonia in the intensive care unit. *Infect Control and Hosp Epidemiol.* 2011; 32:305–314. [PubMed: 21460481]

Figure 1. Distribution of respondents' scores based on number of exclusion criteria selected which are consonant with published randomized controlled trials (RCTs) and guidelines

Figure 2.
Number of reasons chosen

Figure 3.
Bivariable analysis

Table 1

Sample Characteristics

Variable	Percentage
How many beds does your unit(s) have? (median[IQR])	18[12]
76% mechanically ventilated patients undergo spontaneous awakening trial (SAT) every day	48.6%
Academic affiliation	83.8%
Closed ICU	21.6%
Intensivist makes primary decisions	34.4%
SAT protocol in place	89.2%
Sedation goals are addressed in rounds >70% of the time	67.2%
Performing SATs is part of my unit culture (agree or strongly agree)	67.2%
In my opinion, use of SATs increases short-term adverse effects (agree or strongly agree)	17.0%
Performing SATs is hard work (agree or strongly agree)	41.1%
Staff members in my unit are often afraid to perform SATs (agree or strongly agree)	43.6%

Table 2

Exclusion Criteria Selection

Select the appropriate exclusion criteria for a spontaneous awakening trial (SAT):	No	Yes
<i>(Key RCTs (1, 2) and Guidelines (6) included the following as exclusion criteria, suggesting an answer of “Yes”)</i>		
Sedative Infusion for active seizures or alcohol withdrawal	26.7%	73.3%
Neuromuscular blockade	28.6%	71.4%
Active myocardial ischemia in last 24 hours	63.2%	36.8%
Increased intracranial pressure	33.8%	66.2%
Escalating sedative doses due to ongoing agitation	49.3%	50.8%
<i>(Key RCTs (1, 2) and Guidelines (6) did NOT support the following as exclusion criteria, suggesting an answer of “No”)</i>		
Fever > 101.5	89.1%	10.9%
Pressor Infusion	81.6%	18.4%
FiO ₂ > 70%	58.7%	41.4%
PEEP = 10	60.9%	39.1%

Table 3

Multivariable Analysis

Variable	Odds Ratio [95% Confidence Interval]	p value
Presence of an SAT protocol (yes)	1.61 [0.61–4.31]	0.18
Performing SATs is part of my unit culture (agree or strongly agree)	3.11 [1.61–6.01]	0.001
Sedation goals are addressed on rounds (routinely, >70% of the time)	2.85 [1.53–5.31]	0.001
In my opinion, use of SATs increases short-term adverse effects (agree or strongly agree)	0.47 [0.22–1.02]	0.054
Staff members in my unit are often afraid to perform SATs (agree or strongly agree)	0.75 [0.42–1.35]	0.33
Performing SATs is hard work (agree or strongly agree)	0.53 [0.30–0.96]	0.04