

Both Spontaneous Awakening Trials & Spontaneous Breathing Trials



KEY REFERENCES: Laying the Foundation for B (SATs & SBTs) of ABCDEF Bundle

- Ely E. (SBTs) **N Engl J Med.** 1996;335:1864-9.
- Riker R. (SAS) **Crit Care Med.** 1999; 27:1325-9.
- Kress J. (SATs) **N Engl J Med.** 2000;342:1471-7.
- Sessler C. (RASS) **Am J Respir Crit Care Med.** 2002, 166:1338-44.
- Ely E. (RASS) **JAMA.** 2003;289:2983-91.
- Girard T. (ABC Study) **Lancet.** 2008;371:126-34.
- Strøm T. (No Sedation) **Lancet.** 2010;375:475-80.
- Shehabi Y. (Deep Sedation) **Am J Respir Crit Care Med.** 2012;186:724-31.
- Balas M. (ABCDE) **Crit Care Med.** 2013;42:1024-36.
- Bassett R. (IHI ABCDE Collaborative) **Jt Comm J Qual Patient Saf.** 2015;41:62-74.
- Klompas M. (CDC ABCDE Collaborative) **Am J Respir Crit Care Med.** 2015;191:292-301.



KEY REFERENCES: Hazards of Deep Sedation (Additional Studies Laying the Foundation for B)

- Treggiari M. (Light Sedation) **Crit Care Med.** 2009;37:2527-34.
- Pandharipande P. (Lorazepam Predicts Delirium) **Anesthesiology.** 2006;104:21-6.
- Seymour C. (Diurnal Sedation and Liberation) **Crit Care Med.** 2012;40:2788-96.
- Hager D. (Reducing Deep Sedation ALI) **Crit Care Med.** 2013;41:1435-42.
- Shehabi Y. (Goal-Directed Sedation) **Crit Care Med.** 2013;41:1983-91.
- Shehabi Y. (Mortality attributed to Delirium) **Intensive Care Med.** 2013;39:910-8.
- Tanaka L. (Early Oversedation Outcomes) **Crit Care.** 2014;18:R156.
- Burry L. (High Versus Low Sedation Outcomes) **Can J Anaesth.** 2014;61:619-30.
- Minhas MA. (Protocolized Sedation) **Mayo Clin Proc.** 2015;90:613-23.
- Balzer F. (Early Deep Sedation decrease 2 year survival) **Crit Care.** 2015;19:197.



Session Objectives

- Review current evidence related to the hazards of deep sedation and the benefits of a coordinated SAT/SBT approach
- Describe valid and reliable sedation/agitation assessment tools
- Provide practical guidance for reliable SAT and SBT performance
- Discuss facilitators and potential barriers to successful SAT and SBT performance



Goals of ICU Sedation

- Calm
- Comfortable
- Cooperative
- Reduce anxiety and agitation
- Facilitate mechanical ventilation
- Decrease traumatic memory of ICU stay and procedures



How Do We Define “Adequate Sedation”?

- 274 patients
- Sedatives administered during 85% of 18,050 four-hour intervals
- 1 in 3 (32%) - unarousable
- 1 in 5 (22%) - no spontaneous motor activity
- Only 2.6% - thought to be over-sedated

Weinert C. **Crit Care Med.** 2007;35:393-401.



From Canadian authors of SLEAP—

n=712

Patient-days = 3,620

“We found that nearly all patients were managed with continuous-infusion opioids and sedatives. We also found that actual practice was different from what we expected because the available clinical tools—such as protocols and assessment scales—were not necessarily applied at the bedside.”



Burry L. **Can J Anaesth.** 2014;61(7) 619-30.
Data collected 2008-2009.



Negative Consequences of Prolonged, Deep Sedation/Benefits of Light Sedation

- Deep sedation
 - Reduced six-month survival
 - Hospital mortality
 - Longer duration of mechanical ventilation
 - Longer ICU length of stay
 - Increased physiologic stress in terms of elevated catecholamine concentrations and/or increased oxygen consumption at lighter sedation levels BUT no clear relationship between elevation and clinical outcomes

Brook A. **Crit Care Med.** 1999;27:2609-15.

Girard T. **Lancet.** 2008;371:126-34.

Kress J. **N Engl J Med.** 2000;342:1471-7.

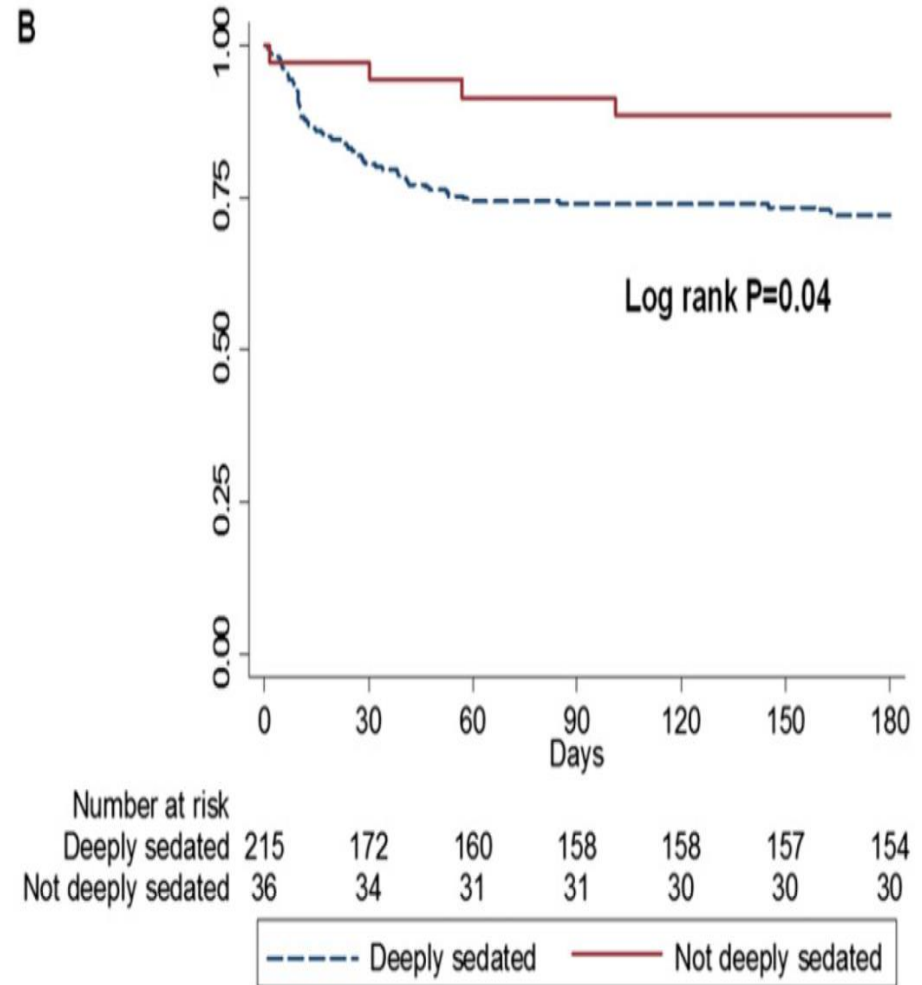
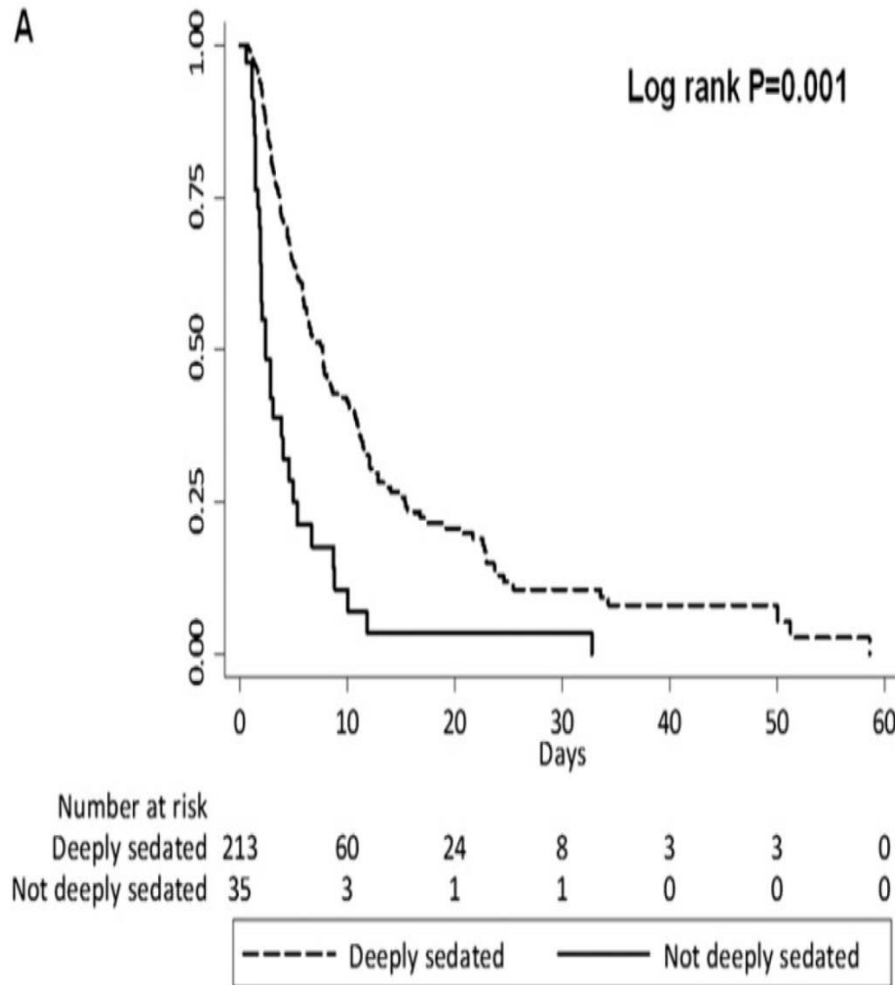
Treggiari M. **Crit Care Med.** 2009;37:2527-34.

Kollef M. **Chest.** 1998;114:541-8.

Shehabi Y. **Am J Respir Crit Care Med.** 2012;186:724-31.



Early Deep Sedation Longer Mechanical Ventilation and Reduced Six-Month Survival



Shehabi Y. **Am J Respir Crit Care Med.** 2012;186:724-31.

Mental Health After Light or Deep Sedation

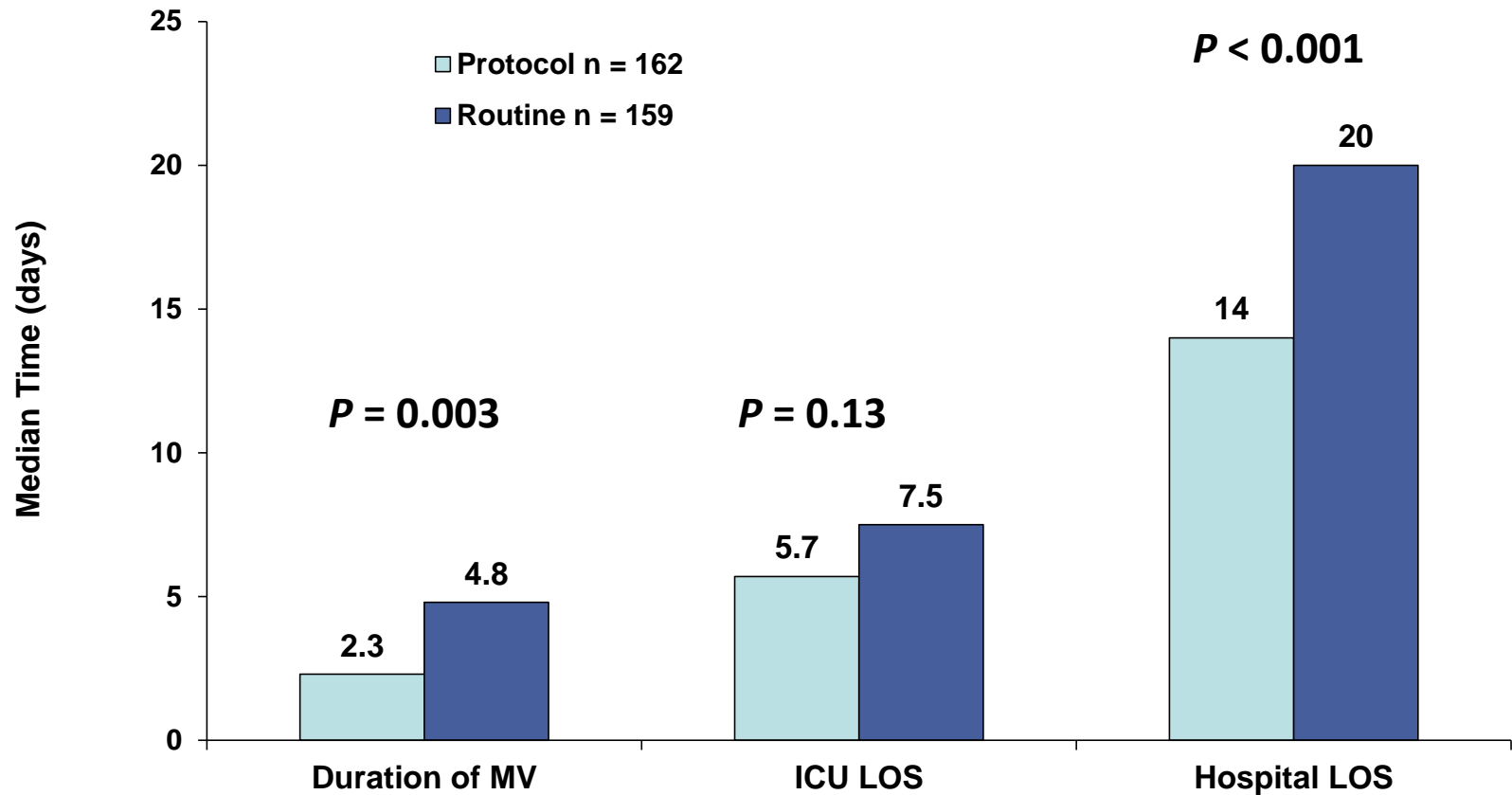
- 137 adults requiring mechanical ventilation-RCT
- Sedation with midazolam
 - Light: Ramsay 1-2, intermittent injection
 - Deep: Ramsay 3-4, continuous infusion
- Results
 - Primary endpoints (4 weeks after ICU discharge)
 - Trend toward more PTSD symptoms with deep sedation ($P=0.07$)
 - More trouble remembering the event ($P=0.02$)
 - More disturbing memories of the ICU ($P=0.05$)
 - No difference in anxiety or depression scores
 - Other endpoints: light sedation patients averaged
 - 1 day shorter on mechanical ventilation ($P = 0.03$)
 - 1.5 days shorter length of stay ($P = 0.03$)



Treggiari M. **Crit Care Med.** 2009;37:2527-34.



Nursing-Implemented Sedation Protocol



Brook A. Crit Care Med. 1999;27:2609-15.



Nursing-Implemented Sedation Protocol

- Statistically shorter:
 - Duration of MV
 - ICU LOS
 - Hospital LOS

Significant patient characteristics/metrics/outcomes

	Protocol	Control	<i>P</i> value
Daily midazolam, mg*	44 ± 31	92 ± 59	0.001
Duration midazolam, hrs**	3	5	0.18
Reintubated†	11 (6)	29 (13)	0.01
VAP diagnosis†	12 (6)	34 (15)	0.005

*Data presented in mean; ** Data presented in median

†Data presented as n (%)



Quenot J. **Crit Care Med.** 2007;35(9):2031-6.

Pharmacist Enforced Adherence to an ICU Sedation Guideline

- Statistically shorter:
 - Duration of MV
 - ICU LOS
 - Hospital LOS

Significant patient characteristics/metrics/outcomes

	RPh	Control	P value
Alcohol/drug overdose [†]	15 (19.2)	6 (7.7)	0.03
Lorazepam equivalents/vent day, mg*	65.2 ± 114.1	74.8 ± 76.1	0.54
Fentanyl equivalents/vent day, mcg*	102.5 ± 328	400 ± 1026	0.02

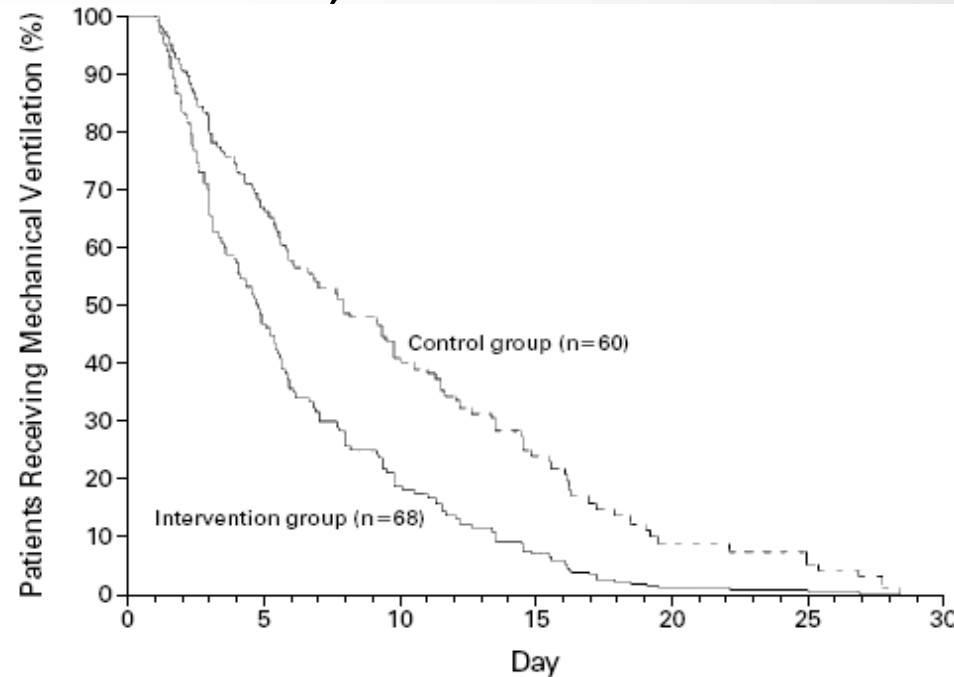
*Data presented in mean ; [†]Data presented as n (%)

Marshall J. **Crit Care Med.** 2008;36(2):427-33.



A—Daily Sedation Interruption Decreases Duration of Mechanical Ventilation

- Hold sedation infusion until patient awake, then restart at 50% of prior dose
- “Awake” defined as any 3 of the following:
 - Open eyes in response to voice
 - Use eyes to follow investigator on request
 - Squeeze hand on request
 - Stick out tongue on request



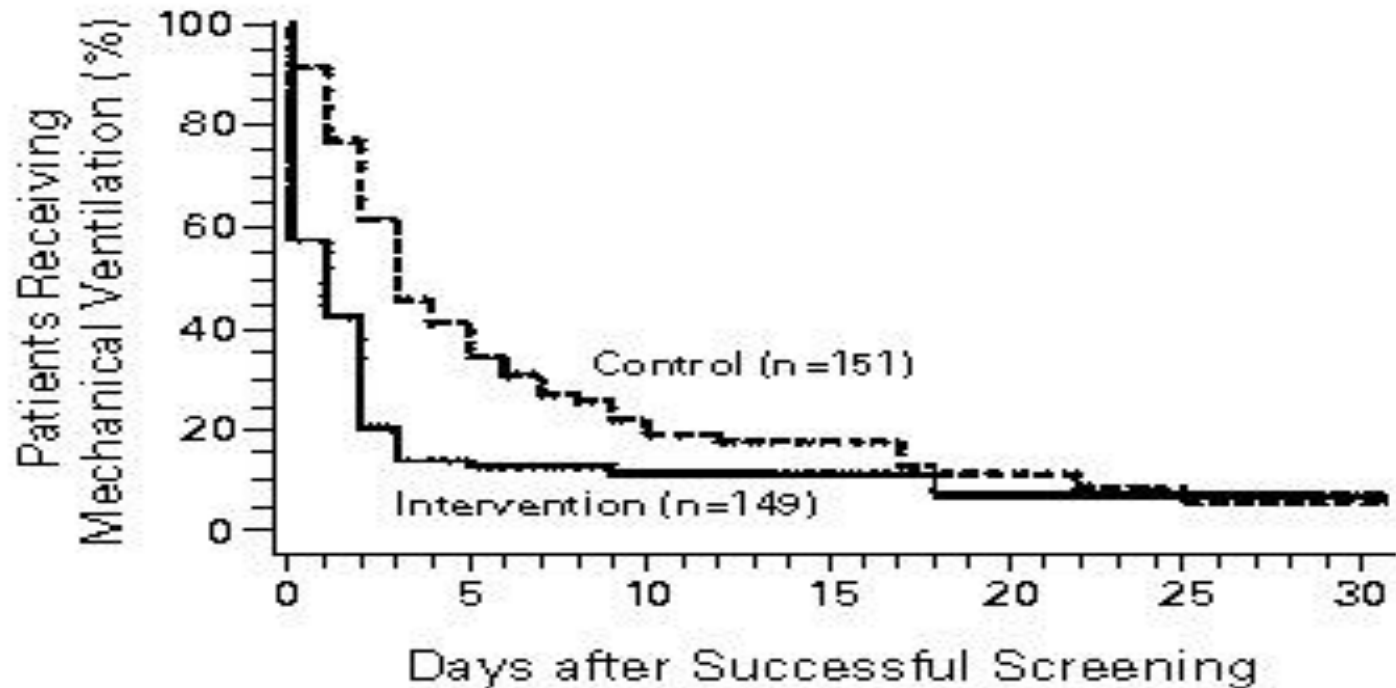
Kress J. **N Engl J Med.** 2000;342:1471-7.

Needham D. **Crit Care Med.** 2012;40:502-9.

- Length of MV 4.9 vs. 7.3 days ($P=0.004$)
- ICU LOS 6.4 vs. 9.9 days ($P=0.02$)
- Fewer diagnostic tests to assess changes in mental status
- No increase in rate of agitated-related complications or episodes of patient-initiated device removal
- No increase in PTSD or cardiac ischemia



B—Analysis of the Duration of Mechanical Ventilation After a Successful Screening Test



Ely E. *N Engl J Med.* 1996;335:1864-9.



ABC Trial

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

Timothy D Girard, John P Kress, Barry D Fuchs, Jason WW Thomason, William D Schweickert, Brenda T Pun, Darren B Taichman, Jan G Dunn, Anne S Pohlman, Paul A Kinniry, James C Jackson, Angelo E Canonico, Richard W Light, Ayumi K Shintani, Jennifer L Thompson, Sharon M Gordon, Jesse B Hall, Robert S Dittus, Gordon R Bernard, E Wesley Ely

Girard T. **Lancet**. 2008;371:126-34.



ABC Trial: Main Outcomes

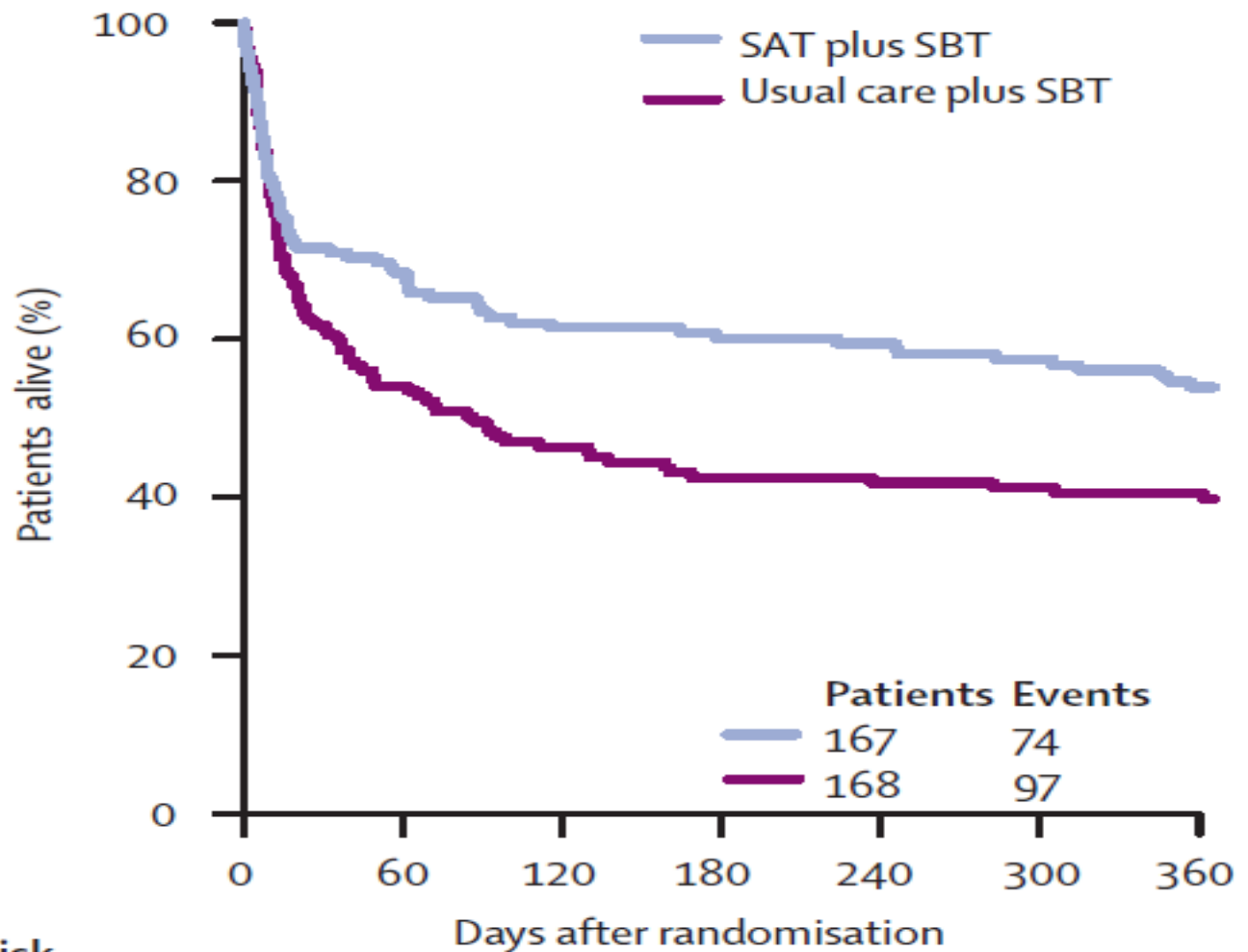
Outcome*	SBT	SAT+SBT	P value
Ventilator-free days	12	15	0.02
Time-to-event, days			
Successful extubation, days	7.0	5	0.05
ICU discharge, days	13	9	0.02
Hospital discharge, days	19	15	0.04
Death at 1 year, n (%)	97 (58%)	74 (44%)	0.01
Days of brain dysfunction			
Coma	3.0	2.0	0.002
Delirium	2.0	2.0	0.50

*Median, except as noted

Girard. **Lancet**. 2008;371:126-34.



ABC Trial: One-Year Mortality



Patients at risk								
		0	60	120	180	240	300	360
SAT plus SBT	167	167	110	96	92	91	86	76
Usual care plus SBT	167	167	85	73	67	66	65	59

Example QI projects using B: Wake Up and Breathe (Both SAT/SBT)



IHI's & CDC's Rethinking Critical Care: Implementing Change Using Bundle Approach

- Qualitative descriptions of IHI's and CDC's collaboratives between 2011 and 2014.
- **Conclusion:** Changing critical care practices requires an multiprofessional approach addressing cultural, psychological, and practical issues.
- **Key Take-Home Points:**
 - 1. Test changes on a small scale
 - 2. Feed back data regularly and provide ongoing education
 - 3. Build will through seeing the work in action

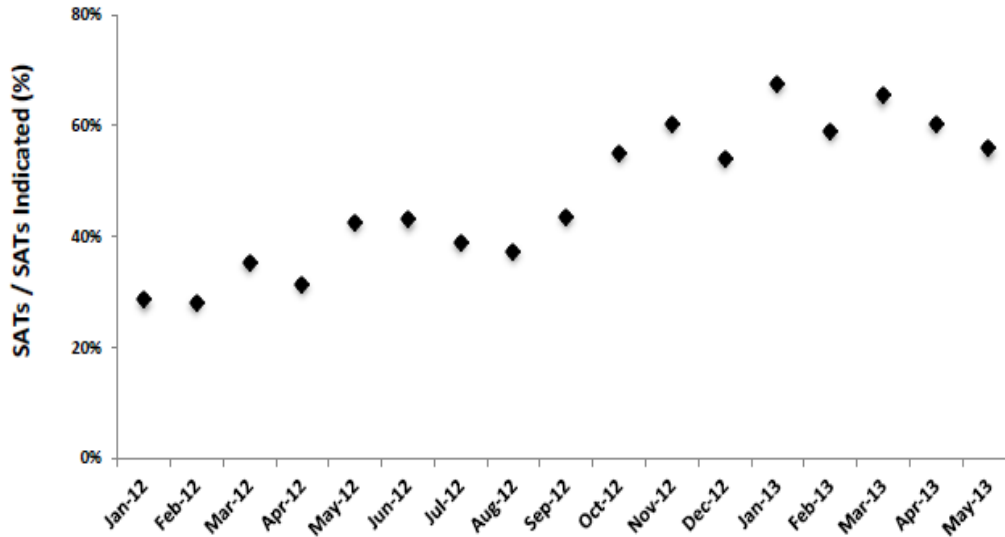
Bassett R. *Jt Comm Qual Patient Saf.* 2015;41:62-74.

Klompas M. *Am J Respir Crit Care Med.* 2015;191:292-301.

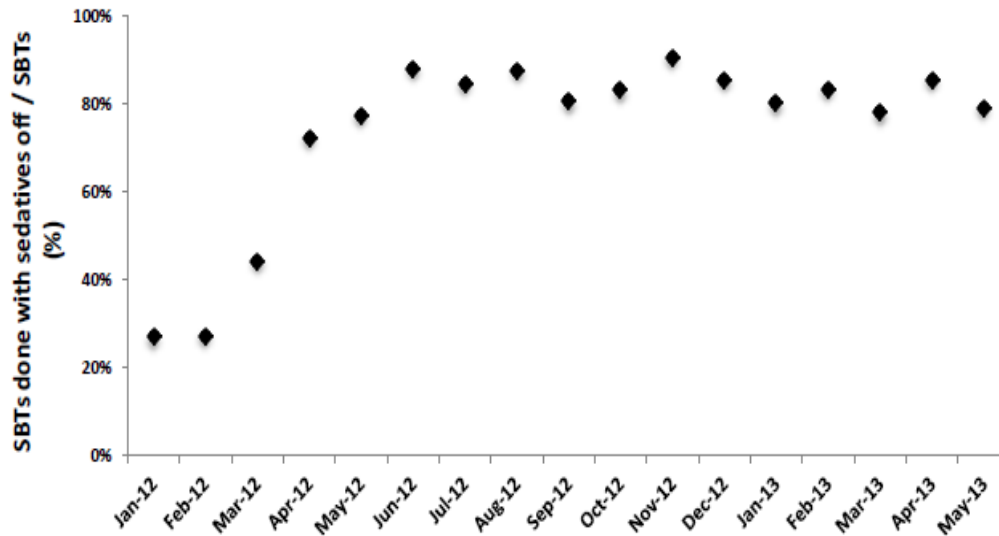


CDC's Wake Up and Breathe Collaborative

SATs / Days with SAT Indicated



SBTs done with sedatives off



- 20 ICUs: 12 full collaborative
- 5,164 consecutive MV days
- Opt-out SATs and SBTs
- 3x-4x increase in completion
- 35% less VAE risk/MV episode
- 65% less IVAC risk/MV episode
- 8 surveillance-only ICUs had no improvements

Klompas M. **Am J Respir Crit Care Med.** 2015;191:292-301.

Wake Up and Breathe in Indiana

- N=702 MICU/SICU patients
- Implemented paired SATs/SBTs
- Average RASS was 1 level more arousable ($P<0.0001$)
- Prevalence of delirium down 11% (66.7% to 55.3%, $P=0.06$)
- Combined delirium/coma down 6% ($P=0.01$)



Khan B. **Crit Care Med.** 2014;42:e791-5.



Keystone's ABCDE Bundle Collaborative

- 51 hospitals in Michigan's Keystone ICU initiative
- Those implementing SATs and delirium screening were **3.5 times more likely** to exercise ventilated patients
- Incomplete or nonsequential bundle implementation yielded lower success rates
- Authors wrote, "Another layer of evidence that for the ABCDEs, the whole is greater than sum of the parts."

Miller M. *Ann Am Thorac Soc*. 2015;12:1066-71.



Bundle Implementation Success: key findings from a meta-analysis

Trogrlić et al. *Critical Care* (2015) 19:157
DOI 10.1186/s13054-015-0886-9



RESEARCH

Open Access

A systematic review of implementation strategies for assessment, prevention, and management of ICU delirium and their effect on clinical outcomes

Zoran Trogrlić^{1*}, Mathieu van der Jagt¹, Jan Bakker¹, Michele C Balas², E Wesley Ely^{3,4}, Peter HJ van der Voort⁵ and Erwin Ista⁶

- 21 studies, all including process measures and 9 with clinical outcomes data



Bundle Implementation Success: key findings from a meta-analysis

- A variety of programs improved process measures
 - eg, 92% Delirium screening adherence
- Using **more** implementation strategies (6 or more) and integrating **PAD** guidelines or **ABCDE** bundle:
 - Statistically lower mortality and shorter ICU LOS
 - Delirium “incidence” static; delirium duration may be better metric
- Strategies targeting **organizational changes** in addition to provider behavior also associated with reduced mortality

Trogrlić Z. **Critical Care** 2015; 19:157



Sedation, Dehumanization and Maslow's Hierarchy in Critical Care

Stop...let's talk about this point:

“What often happens is that sedation is stopped in the morning for a brief period and then resumed later that day or during the night when the patient begins to wake up and is delirious. The physician on call or the nurses on duty either will not, cannot, or simply do not spend time dealing with an awake patient or perhaps operate under the belief that people should not be awake while receiving mechanical ventilation.”

Jackson J. **J Crit Care**. 2014;29:438-44.

Seymour C. **Crit Care Med**. 2012;40:2788-96 (diurnal sedation).



Valid and Reliable Agitation/Sedation Assessment Tools



PAD Agitation/Sedation Assessment Recommendations

- Depth and quality of sedation should be routinely assessed in all ICU patients (1B)
- The RASS & SASS are the most valid and reliable scales for assessing quality and depth of sedation in ICU patients (B)
- Suggest using objective measures of brain function to adjunctively monitor sedation in patients receiving neuromuscular blocking agents (2B)
- Use EEG monitoring either to monitor nonconvulsive seizure activity in ICU patients at risk for seizures, or to titrate electrosuppressive medication to achieve burst suppression in ICU patients with elevated intracranial pressure (1A)



Barr J. **Crit Care Med.** 2013;41:263–306.



Sedation-Agitation Scale (SAS)

Score	State	Behaviors
7	Dangerous agitation	Pulls at ET tube, climbs over bedrail, strikes at staff, thrashes side to side
6	Very agitated	Does not calm despite frequent verbal reminding, requires physical restraints
5	Agitated	Anxious or mildly agitated, attempts to sit up, calms down to verbal instructions
4	Calm and cooperative	Calm, awakens easily, follows commands
3	Sedated	Difficult to arouse, awakens to verbal stimuli or gentle shaking but drifts off
2	Very sedated	Arouses to physical stimuli but does not communicate or follow commands
1	Unarousable	Minimal or no response to noxious stimuli, does not communicate or follow commands

Riker R. **Crit Care Med.** 1999;27:1325-9.

Brandl K. **Pharmacotherapy.** 2001;21:431-6.

Richmond Agitation Sedation Scale (RASS)

Score	Descriptor	Characteristics
+4	Combative	Combative, violent, immediate danger to staff
+3	Very agitated	Pulls or removes tube(s) or catheter(s); aggressive
+2	Agitated	Frequent nonpurposeful movement, fights ventilator
+1	Restless	Anxious, apprehensive but movements not aggressive or vigorous
0	Alert and calm	
-1	Drowsy	Not fully alert, but has sustained awakening to voice (eye opening and contact >10 seconds)
-2	Light sedation	Briefly awakens to voice (eye opening and contact <10 seconds)
-3		
-4	Moderate sedation	Movement or eye opening to voice (but no eye contact)
	Deep sedation	No response to voice, but movement or eye opening to physical stimulation
-5	Unarousable	No response to voice or physical stimulation



Sessler C. *Am J Respir Crit Care Med*. 2002;166:1338-44.

Facilitating Reliable Performance of SATs and SBTs



B—Related Terminology

- Spontaneous Awakening Trial (SAT)
- Daily Awakening Trial
- Daily Sedation Interruption (DSI)
- Daily Sedation Cessation
- Sedation Vacation
- Protocolized Sedation
- Spontaneous Breathing Trial (SBT)
- T-Piece Trial
- Weaning Trial



PAD Depth of Sedation Statements

- Maintaining light levels of sedation in adult ICU patients is associated with improved clinical outcomes, e.g., shorter duration of mechanical ventilation and shorter ICU lengths of stay (LOS) (B).
- Maintaining light levels of sedation increases the physiologic stress response, but is not associated with an increased incidence of myocardial ischemia (B).
- The association between depth of sedation and psychological stress in these patients remains unclear (C).

Barr. **Crit Care Med.** 2013;41:263–306.



PAD Depth of Sedation Recommendations

- We recommend that sedative medications be titrated to maintain **a light rather than a deep level** of sedation in adult ICU patients, unless clinically contraindicated (+1B).
- We recommend that ***either* daily sedation interruption or a light target level of sedation** be routinely used in mechanically ventilated adult ICU patients (+1B).



Barr J. Crit Care Med. 2013;41:263–306.



Targeted Level of Consciousness

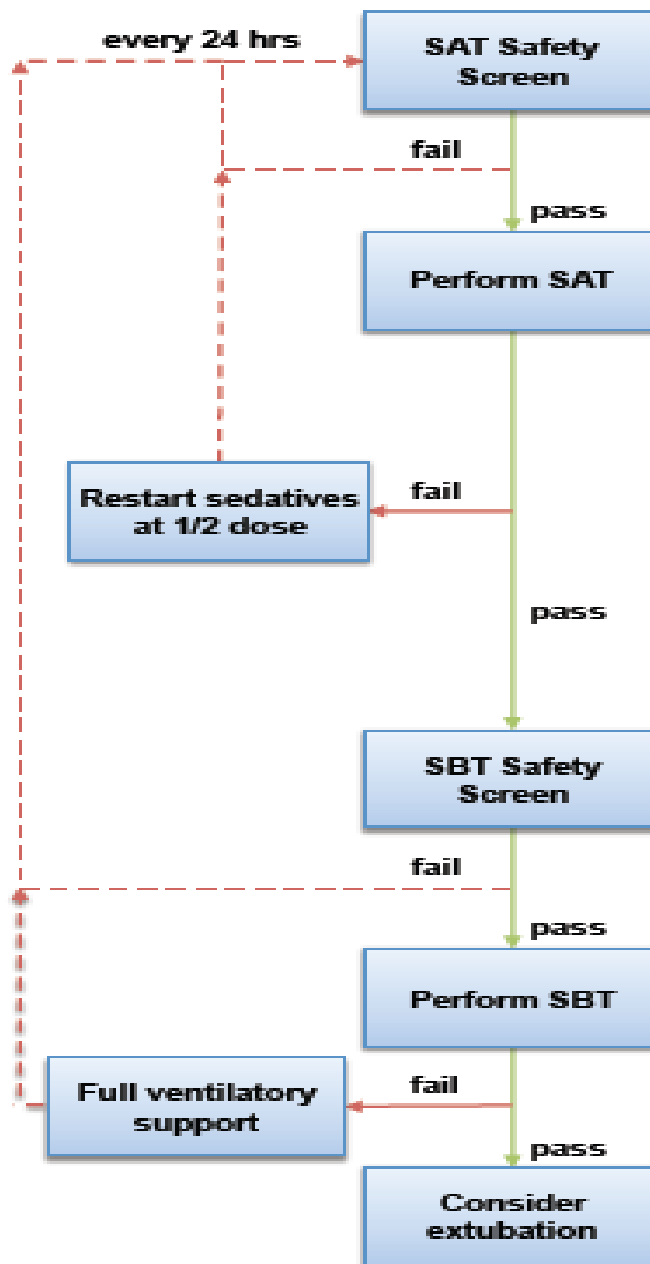


Choose Target RASS

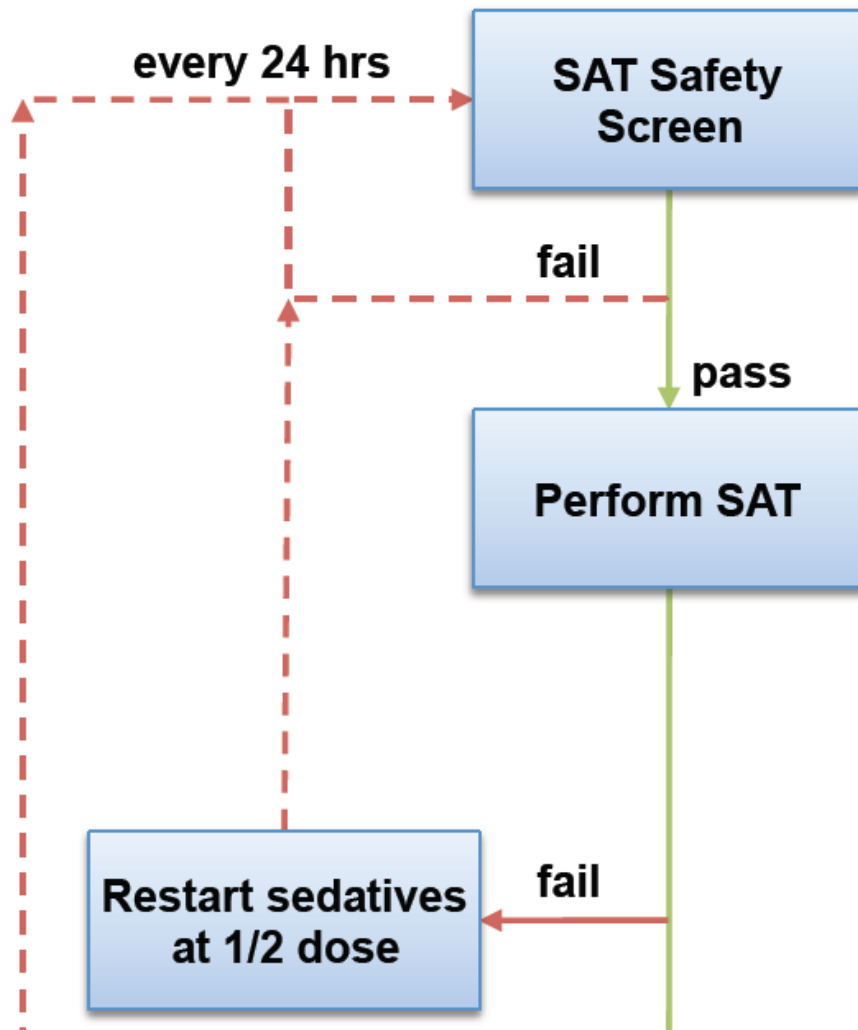
Assess Actual RASS

**Modify treatment so
Actual = Target**

Wake Up and Breathe Protocol



SAT Protocol



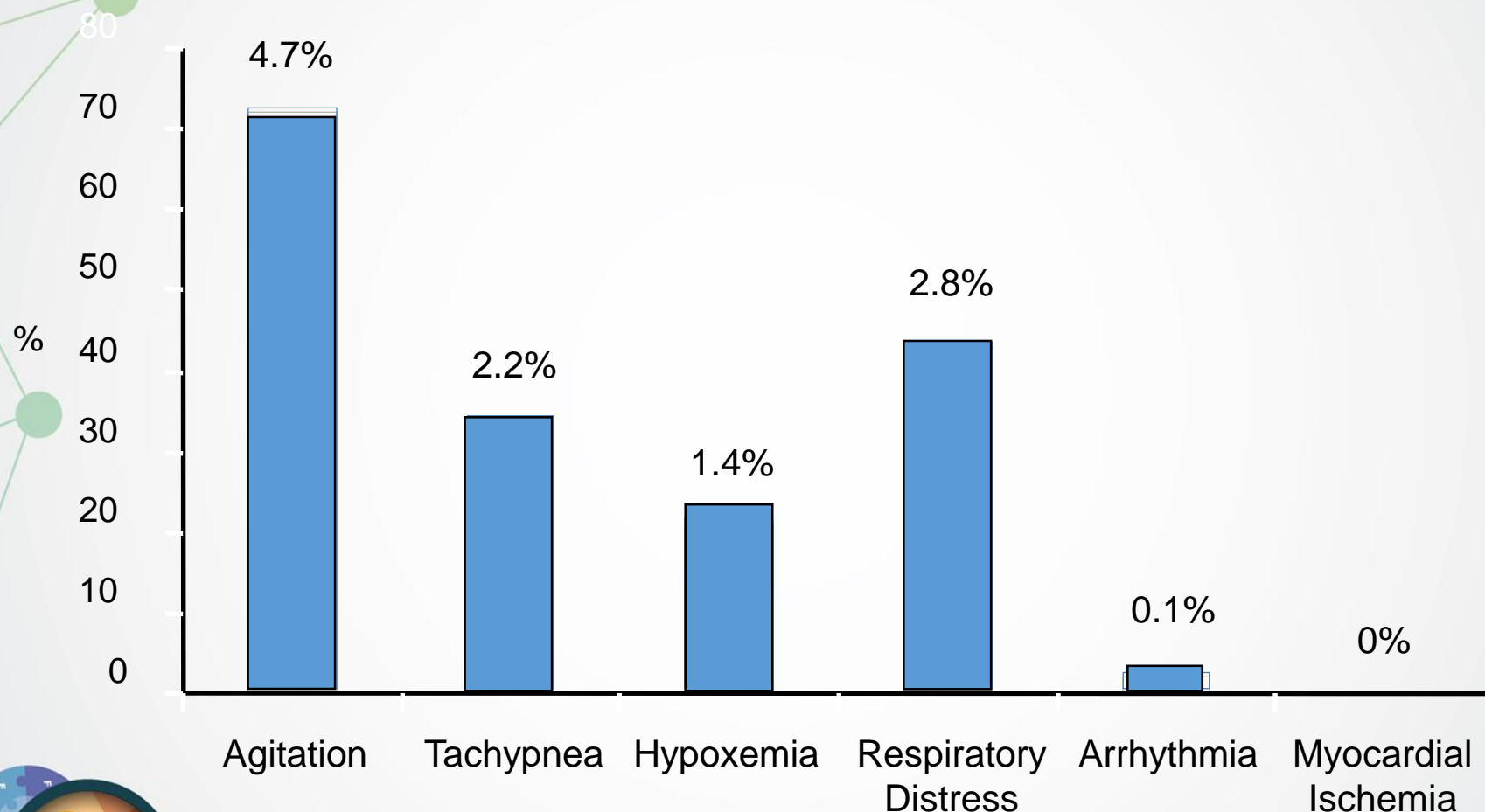
SAT Safety Screen

No active seizures
No alcohol withdrawal
No agitation
No paralytics
No myocardial ischemia
Normal intracranial pressure

SAT Failure

Anxiety, agitation, or pain
Respiratory rate > 35/min
Oxygen saturation < 88%
Respiratory distress
Acute cardiac arrhythmia

ABC Study Restarting Criteria Frequency



Girard T. **Lancet**. 2008;371:126-34.

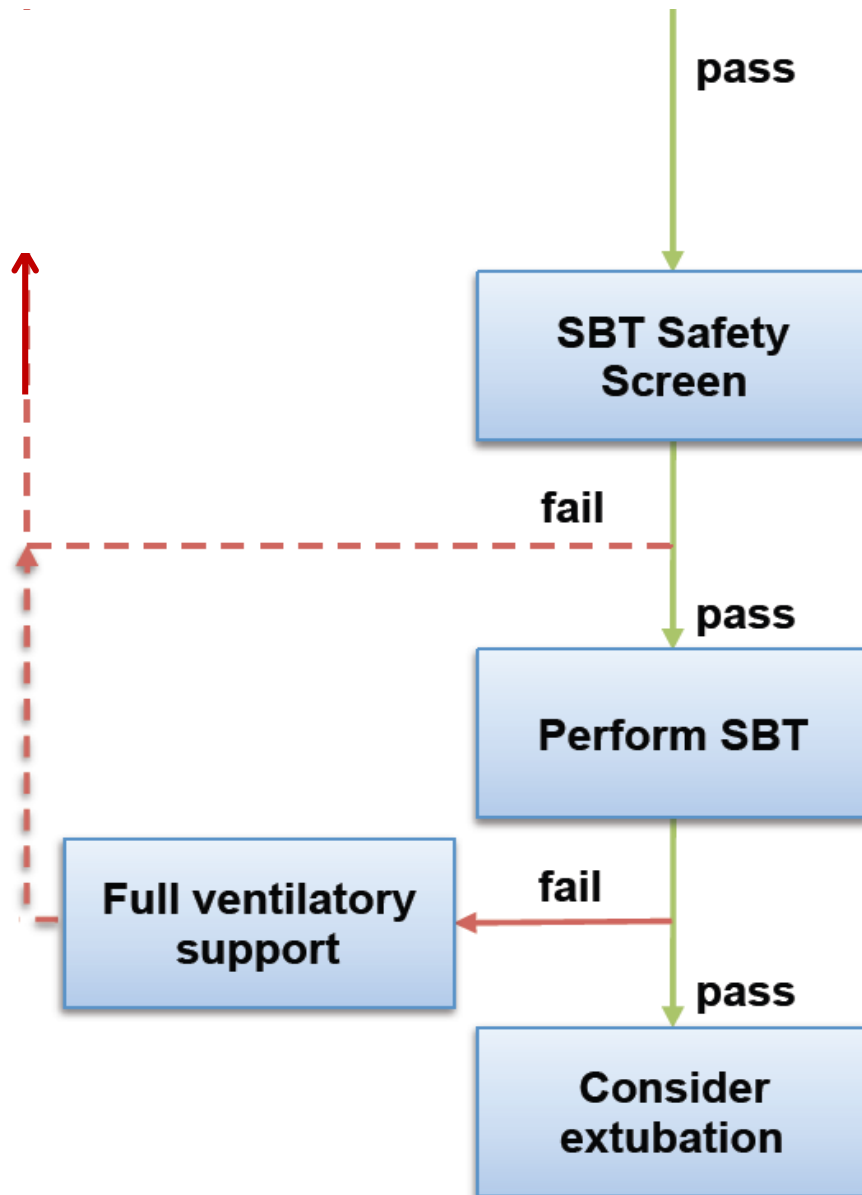


Drug Restarting Guidelines

- Restart drug(s) at half of the previous dose
- Titrate to goal
- Consider bolus dose if rapid anxiolysis needed
 - Watch for signs of bradycardia and hypotension



SBT Protocol



SBT Safety Screen

No agitation
Oxygen saturation $\geq 88\%$
 $\text{FiO}_2 \leq 50\%$
 $\text{PEEP} \leq 7.5 \text{ cm H}_2\text{O}$
No myocardial ischemia
No vasopressor use
Inspiratory efforts

SBT Failure

Respiratory rate $> 35/\text{min}$
Respiratory rate $< 8/\text{min}$
Oxygen saturation $< 88\%$
Respiratory distress
Mental status change
Acute cardiac arrhythmia

Things to Consider: Barriers

- Concern by staff
- Workload and productivity concerns
- Fear of patient discomfort and asynchrony
- Fear of inadvertent extubation
- Fear of self-extubation during decreased sedation
- Excuses: “Let’s just give it one more day.” “It’s late in the day, and we don’t have coverage tonight.”

Ostermann M. **JAMA**. 2000;283:1451-9.

Guttormson J. **Intensive Crit Care Nurs**. 2010;26:44-50.

Tanios M. **J Crit Care**. 2009;24:66-73.



Things to Consider: Facilitating Success

- Extubation takes a team
- Timing
- Dedicated RRT in rounds speaking up
- Ventilator LOS posted
- Extubation rates posted
- Incentives aligned around common goals



SAT/SBT Outcomes Summary

- Decreased days of mechanical ventilation
- Reduced weaning time
- Reduced reintubation rates
- Fewer days with delirium
- Decreased length of ICU stay
- Decreased length of hospital stay

Ely E. **N Engl J Med.** 1999;335:1864-9.

Girard T. **Lancet.** 2008;371:126-34.

Esteban A. **Am J Respir Crit Care Med.** 1997;156:459-65.

Esteban A. **Am J Respir Crit Care Med.** 1999;159:512-8.



All slides beyond
this point will be
reference only
slides

The Problem

- Negative outcomes of prolonged ventilation
 - Ventilator-associated pneumonia
 - Immobility
 - Delirium
- Sedation used to relieve anxiety and agitation
 - Oversedation
 - Undersedation
 - Harmful outcomes



Klompas M. **Am J Respir Crit Care Med.** 2015;191:292-301.
Girard T. **Lancet.** 2008;371:126-34.



Bundle Synergy

Synergy of SAT and SBT

- Decreased medication accumulation
- Decreased oversedation
- Increased opportunity for effective independent breathing



Bundle Synergy

Wake Up and Breathe Protocol

- Combines SAT and SBT
- Two-step process
- Safety screen
- Trial period



*TAP = Team Administered Protocols

- Assessment: SAT, CAM-ICU, RASS, SBT
- Treatment: Most effective when implemented by nursing, respiratory therapy, and physical therapy personnel working together as an ICU team.

*Credit—Sutter Health

Barr J. Delving Into the ICU Pain, Agitation, & Delirium Care Bundle.
Cynosure Health webinar, slide 17; July 26, 2012; San Francisco, CA



SAT Safety Screen (reference safety screen)

- No active seizures
- No alcohol withdrawal being treated
- No paralytics
- No myocardial ischemia <24 hours
- No elevated Intracranial pressure
- Agitation requiring escalating sedation previous six hours

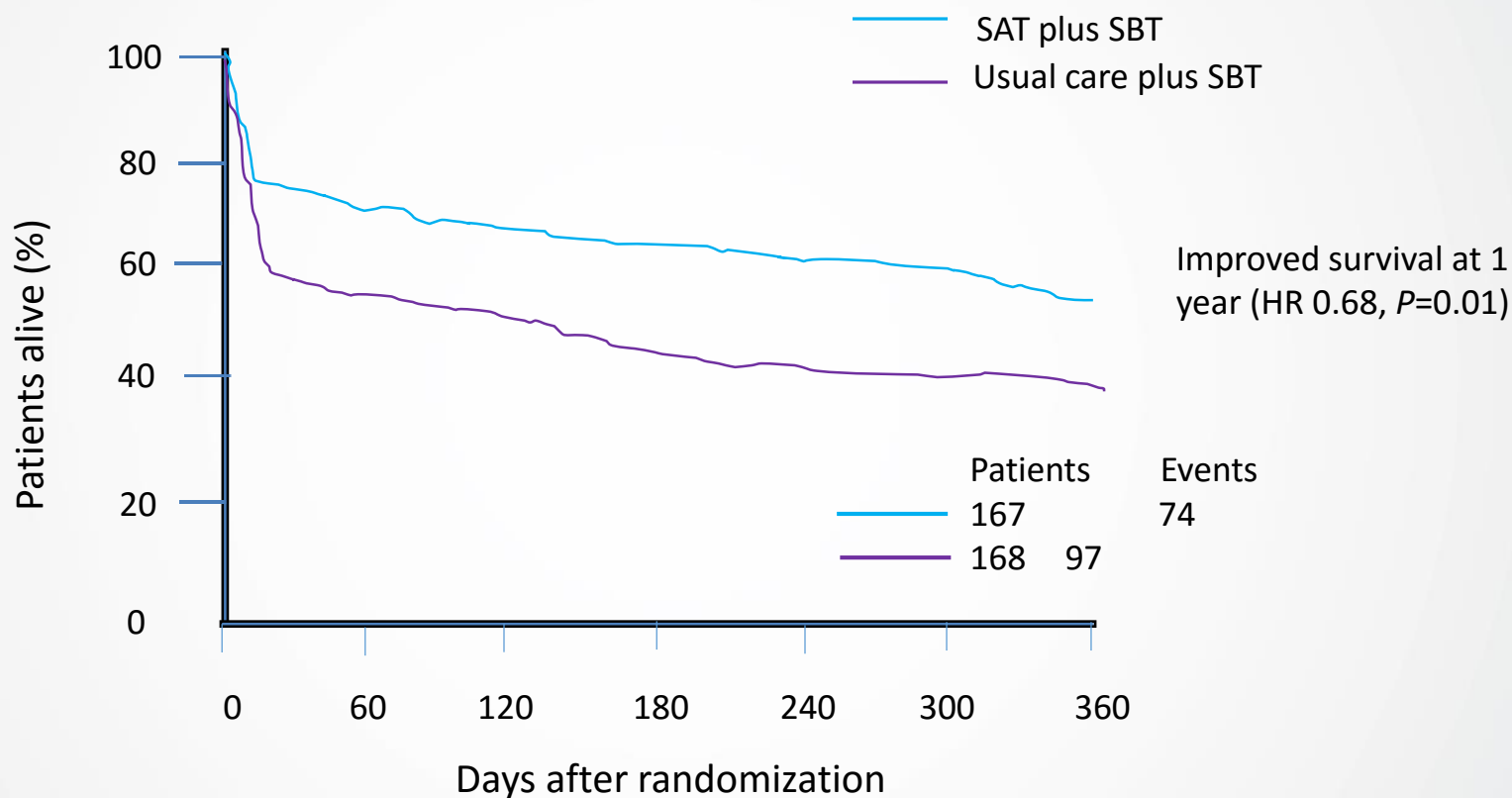


SAT Failure After:

- Anxiety, agitation or pain (restart at ½)
- Respiratory rate > 35
- SpO₂ < 88
- Respiratory Distress
 - Two or more signs: marked use of accessory muscles, abdominal paradox, diaphoresis, marked subjective dyspnea
- Tachycardia
- Acute myocardial arrhythmia



Survival Benefit of Linked Sedation Interruption with SBT After (refer slide 5)



Patients at risk								
SAT plus SBT	167	110	96	92	91	86	76	
Usual care plus SBT	167	85	73	67	66	65	59	

Girard T. **Lancet**. 2008;371:126-34.

More Specific Patient Population

SAT Exclusion Criteria After

- Moribundity: Withdrawal of life support
- Hemoptysis
- Elevated ICP (>20 mm Hg)
- Open abdomen/chest
- Unsecured cerebral aneurysm
- Unstable spine
- Unusual ventilation (HFOV, VDR)



Perceived Barriers of Sedation Protocols and Daily Sedation Interruption (slide 12)

- Multidisciplinary Web-based survey—904 responders
- Reasons for lack of protocol use:
 - No physician order (35%)
 - Lack of nursing support (11%)
 - Fear of over-sedation (7%)
- Barriers for daily sedation interruption:
 - Nursing acceptance (22%)
 - Risk of device removal (19%)
 - Respiratory compromise (26%)
 - Patient discomfort (13%)



Tanios M. **J Crit Care.** 2009;24:66-73.



Barriers after NURSING 12

- Ostermann et al. In closely monitored clinical trials, patients were at the target level of sedation, on average, only 69% of the time.
- Guttormson et al. found that one-third of the variance in the number of patients who received sedatives was accounted for by nurses' attitudes.
- Only 17.7% of respondents thought it was easier to care for an awake and alert patient who was receiving mechanical ventilation than to care for a similar patient who was more sedated.

Ostermann M. **JAMA**. 2000;283:1451-9.

Guttormson J. **Intensive Crit Care Nurs**. 2010;26:44-50.



How to Coordinate (blend this into 25-28, how to coordinate)

- Plan on rounds:
 - Physician champion
 - Structured rounds
- Involve respiratory and physical therapy
 - Transports
 - Mobility sessions



What to Do With Pass/Failure

- Do not re-sedate if pass
- Failure: Restart sedation at half previous dose and titrate to target
- If SBT pass, liberate
- Treat pain and discomfort



SBT

- SBT composed of two parts
 - Safety screen
 - Trial
- Ventilatory support removed
 - T-tube / CPAP +5 cm H₂O / PSV < +7 cm H₂O
 - No change in FI_O₂
- Failed SBT if:
 - RR \geq 35 or \leq 8 breaths/min
 - SaO₂ < 88% for > 5 min
 - Abrupt change in mental status
 - Cardiac arrhythmia
 - Two or more signs of respiratory distress (accessory muscle, diaphoresis, etc.)

Girard T. **Lancet**. 2008;371:126-34.



SBT Protocol

Step 1. Conduct Safety Screen

- NMB use
- MAP < 60 mm Hg
- FIO₂ > 50%
- PEEP > 8 cm H₂O
- Minute ventilation > 15 L/min
- Vasopressor use

FAIL

Continue mechanical ventilation at prior settings.

PASS

Ensure appropriate analgesia
(Pain score 0-3)

Sedation goal achieved

Step 2. Conduct 2 minute tolerance test

- CPAP=5, RR=0, No PSV
- Allow no breath for up to 60 sec

FAIL

Place back on full support.
Notify house staff for discussion
on rounds.

PASS

Step 3. Conduct SBT (30-120min)

- PSV=5, PEEP=5, RR=0
- Nursing / RT perform ongoing assessment

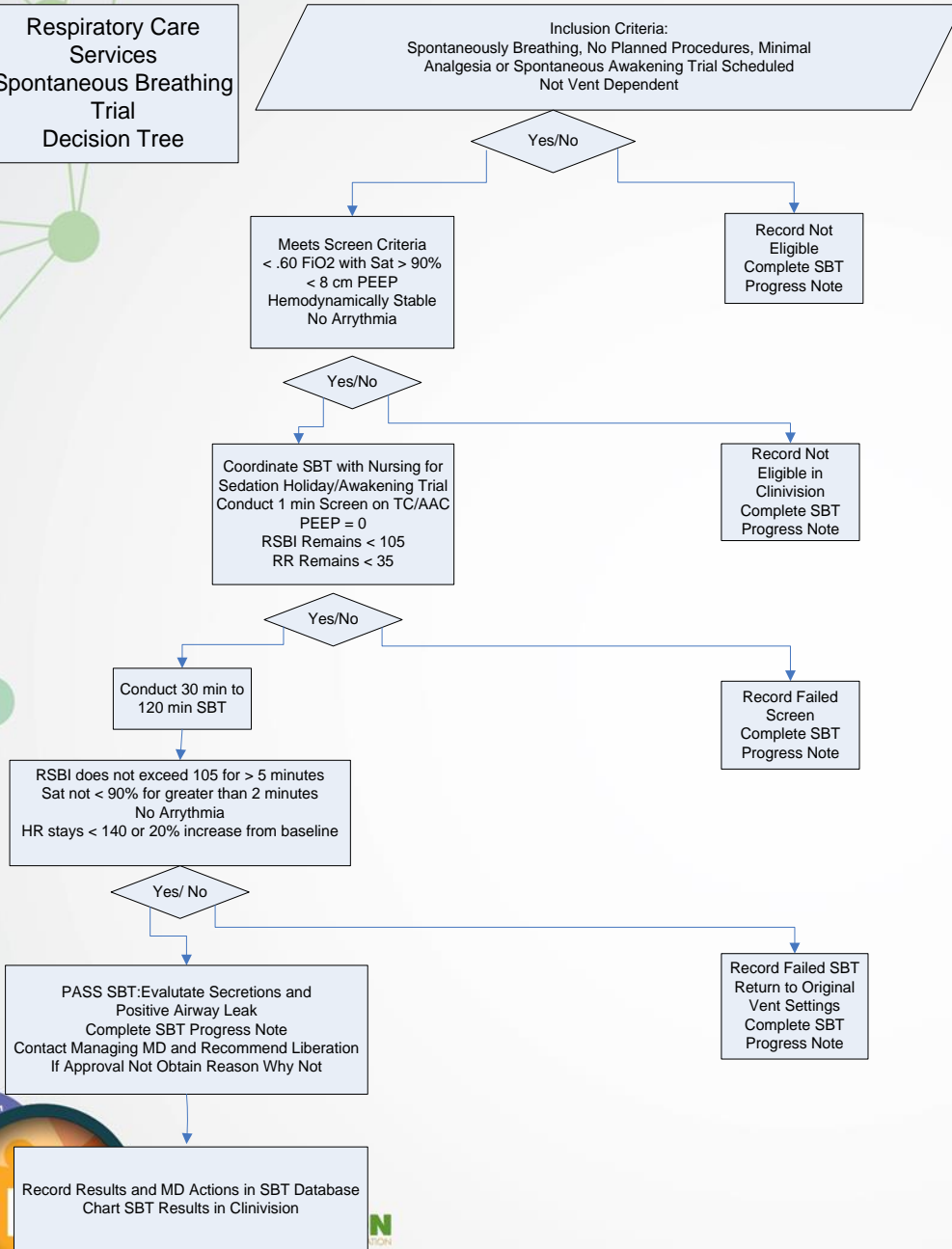
FAIL

PASS

Record patient outcome.
Get order for liberation.



Respiratory Care Services Spontaneous Breathing Trial Decision Tree



How to coordinate with SAT
Workload Distribution
Out of Unit Transports
Change Vent Checks to Q4

What to do with SAT/SBT Results?

How to Communicate

How to Track Compliance After



0002B3

DO NOT USE	U	IU	QD	QOD	Trailing Zero	Lack of Leading Zero	MS	MSO4	MgSO4
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Date & Time _____

Respiratory Care Services : Spontaneous Breathing Trial (Rev.8/09)

☐ **No SBT Performed:** A Spontaneous Breathing Trial was Not Performed due to the following :

☐ Planned Procedure ☐ FiO2 greater than .6 ☐ PEEP greater than 8 ☐ Hemodynamic Instability

☐ Patient Sedated ☐ SpO2 less than 90% ☐ Inadequate Spontaneous Ventilation

A Spontaneous Breathing Trial was performed beginning at _____ AM.
The SBT duration was _____ minutes. The results of the SBT were as follows:

☐ **Successful SBT:** The patient successfully completed the Spontaneous Breathing Trial and maintained a Rapid Shallow Breathing Index below 105 without occurrence of SpO2 desaturation below 90%, heart rate greater than 140 or greater than 20% from baseline, or any evidence of ectopy or ischemic changes. _____ was contacted at _____.

☐ extubation / liberation was recommended.
Completed weaning parameters: Vt _____ VC _____ NIF _____ Cuff leak > 25% _____

☐ **An order for Liberation was obtained**

☐ **An order for Liberation was not obtained due to the following reason:**

☐ Need for Continuing Sedation ☐ Level Of Consciousness ☐ Airway Protection

☐ Planned Procedure ☐ Physician Prerogative ☐ No Reason Given ☐ Family Request

☐ **Failed SBT:** The Patient Failed the Spontaneous Breathing Trial after a period of _____ minutes.
Failure was due to:

☐ Rapid Shallow Breathing Index exceeded 105 for greater than 5 minutes

☐ Heart Rate increased above 140 or greater than 20% from baseline

☐ SpO2 decreased below 90% for greater than 2 minutes

☐ Respiratory Rate increased above 35 breaths/minute for greater than 5 minutes

☐ Development of ectopy or ischemic changes

☐ Excessive use of accessory muscles or paradoxical breathing

☐ Increased anxiety or diaphoresis

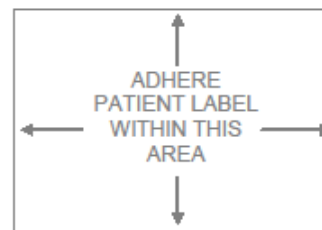
Respiratory Therapist Signature/credentials _____ Date/Time _____

History, Physical Examination, Consultations,
Progress Notes, Discharge Summary

Methodist The Methodist
Hospital

**PATIENT
PROGRESS NOTES**

Form # 283-NL (4/2006)



Team communication
paper progress note
integration in EMR
rounds

Mechanics have little
value

Secretions and cuff
leak important
AFTER

Some Failure Criteria for SBT After

- RR >35 breaths/min for 5 min or more
- HR elevated >120% baseline for >5 min
- RSBI >105 greater than 5 min
- SBT Duration
 - Minimum 30 min
 - Better prognostic indicator at 120 min

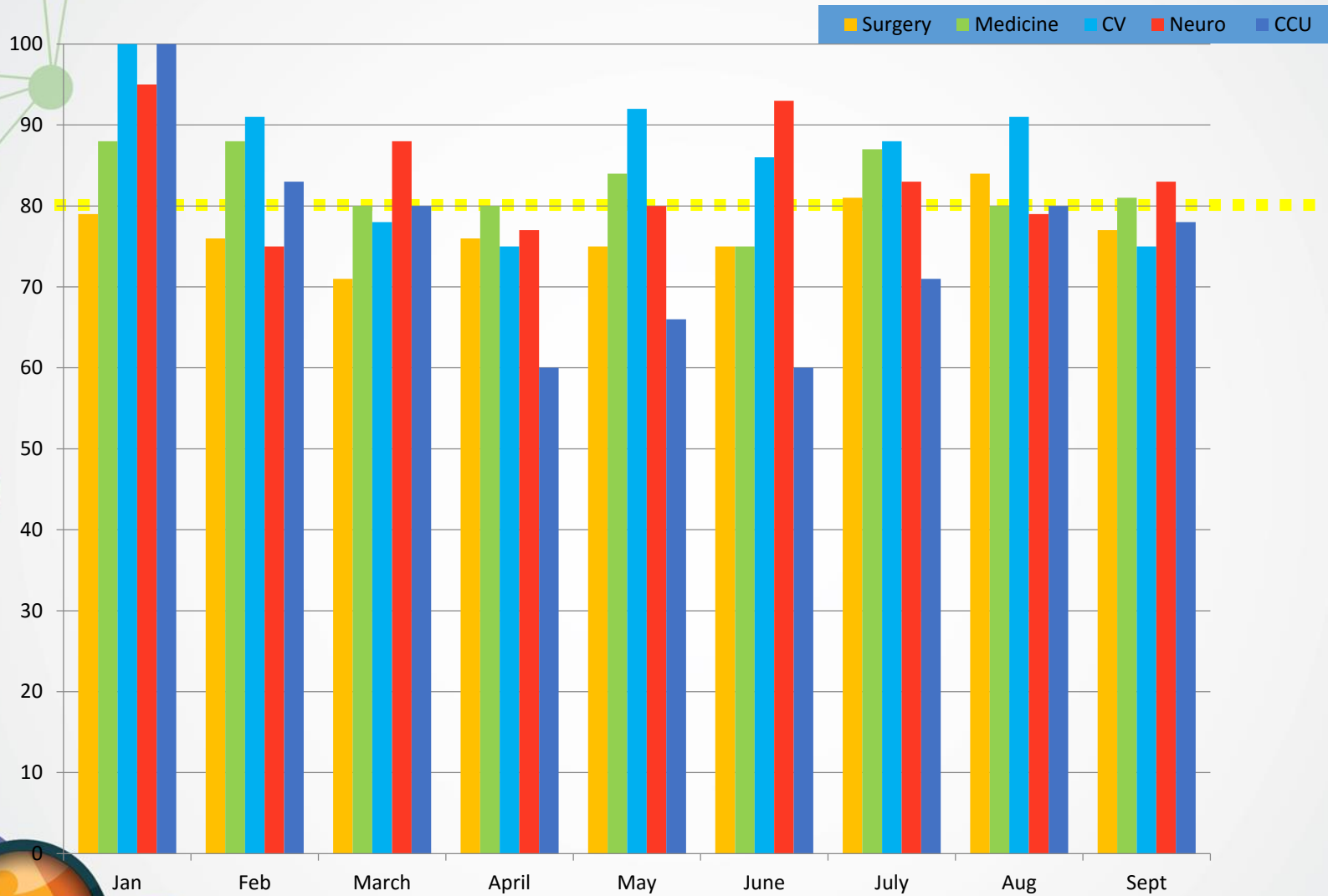


What to Track for Quality SBT After

- % eligible patient SBT performed
- % pass SBT
- reasons for SBT failure
- % successful SBT liberated
- % re-intubation
- % self-extubated who are re-intubated



% Extubation after Successful SBT by Unit



Goal



Multiple Unit
Goal Setting