



STBUR: Sleep Trouble Breathing and Unrefreshed questionnaire: Evaluation of screening tool for post-anesthesia care and disposition

Yaport M, Simpao A, Tan J, Wasey J, Lingappan A, Ahumada L, Song B, Wu L, Jablonka D, Rehman M, Dubow S, Gálvez J.
Department of Anesthesiology and Critical Care Medicine,
The Children's Hospital Of Philadelphia - Philadelphia, PA; Perelman School of Medicine, The University of Pennsylvania.



Introduction

The Snoring, Trouble Breathing and Un-Refreshed (STBUR) Questionnaire is a 5-question tool to screen for pediatric sleep-disordered breathing (SDB).

SDB is associated with perioperative respiratory adverse events (PRAE) in children.(1, 2)

The STBUR tool use is routine in pre-anesthesia evaluation of patients presenting for outpatient surgery at The Children's Hospital of Philadelphia (CHOP).

We evaluated the performance of the STBUR score as a risk-stratification tool for post-anesthesia events that can impact scheduling patients in ambulatory surgical settings vs inpatient hospital surgery.

Methods

Retrospective study of all children who completed a pre-anesthesia evaluation before elective surgery at CHOP.

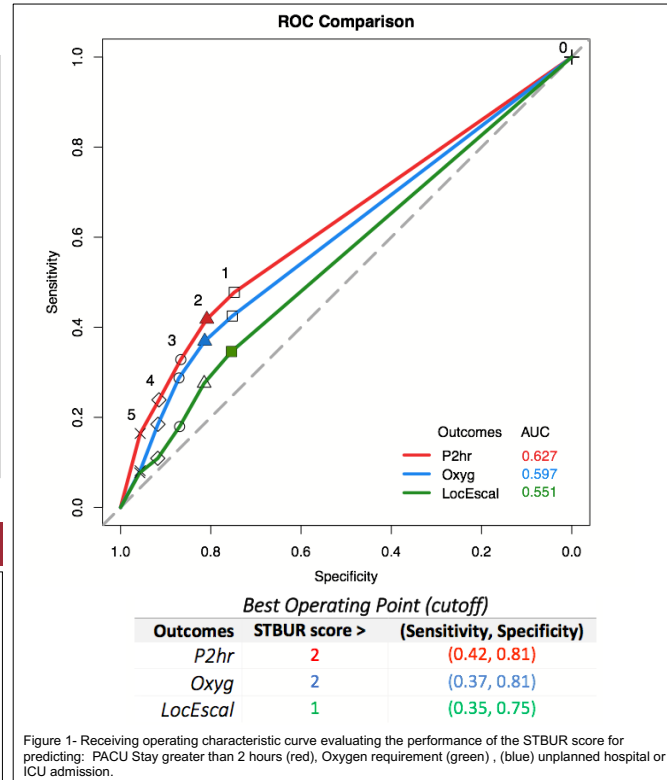
Positive STBUR was defined in two categories:

- Low Threshold: Positive STBUR>0 and negative STBUR=0
- High threshold: Positive as STBUR=5 and negative as STBUR<5.

Primary outcome based on 1 of 4 criteria:

1. Oxygen requirement within 24 hours of PACU discharge
2. Duration of phase 1 recovery in PACU greater than 2 hours
3. Anesthesia emergency activation in PACU
4. Unplanned hospital or ICU admission

Univariate analysis was performed. Sensitivity, specificity, and predictive values were calculated. A p-value of < 0.05 was considered statistically significant.



	Low STBUR Threshold (Positive score STBUR > 0)				High STBUR Threshold (Positive score STBUR 5)			
	Post-op O ₂ Therapy	Phase 1 > 2 hours	PACU Emergency	Unplanned admission	Post-op O ₂ Therapy	Phase 1 > 2 hours	PACU Emergency	Unplanned admission
Sensitivity	42.5%	47.8%	66.7%	34.6%	8.2%	16.4%	0.0%	7.7%
Specificity	75.2%	74.8%	74.6%	75.4%	95.7%	95.7%	95.5%	95.8%
Positive Predictive Value	6.5%	2.1%	0.1%	3.9%	7%	4.1%	0%	5%
Negative Predictive Value	97%	99.2%	99.9%	97.5%	96.3%	99%	99.9%	97.3%
p-Value	< 0.05	< 0.05	0.10	< 0.05	< 0.05	< 0.05	0.71	< 0.05

Table 1- Sensitivity, Specificity and p-value of Low Threshold STBUR (left) and High Threshold STBUR (right)

Results

6,025 patients completed pre-operative STBUR questionnaire in the pre-operative evaluation.

Low STBUR threshold had 1,533 patients

High STBUR threshold had 270 patients

STBUR positive associated with a statistically significant increase in

- Requiring Oxygen follow PACU stay until hospital discharge
- Spending greater than 2 hours in phase 1 PACU
- Having an unplanned admission to hospital or ICU

No difference in the rate of anesthesia emergency activation.

The sensitivity of the screening tool ranges from 8% to 48% depending on the criteria set for a positive screen (i.e. STBUR>0 or STBUR=5)(Table 1).

Discussion

STBUR can be implemented in pre-anesthesia evaluation workflow

Negative predictive value indicates potential usability as a screening tool

Limitation: Positive predictive value is 0.1-7% across outcome variables.

STBUR may be useful as a screening tool to:

- Triage patient scheduling between free-standing and in-patient surgical facilities
- Guide scheduling of surgical procedures for patients that fail STBUR screen to earlier in the day.
- Explore schedule optimization strategies to minimize impact of potential prolonged PACU stay, unplanned admissions and post-operative oxygen therapy needs.

References

1. Tait et al. "The STBUR questionnaire for identifying children at risk for sleep-disordered breathing and postoperative opioid-related adverse events," *Paediatr. Anaesth.* 2016.
2. Tait et al. "The STBUR questionnaire for predicting perioperative respiratory adverse events in children at risk for sleep-disordered breathing," *Paediatr. Anaesth.* 2013.