

National Early Warning Score Analysis as an Indicator for Postoperative Escalation of Care – A Cohort Study



Albany Medical College
Center for Nurse Anesthesiology

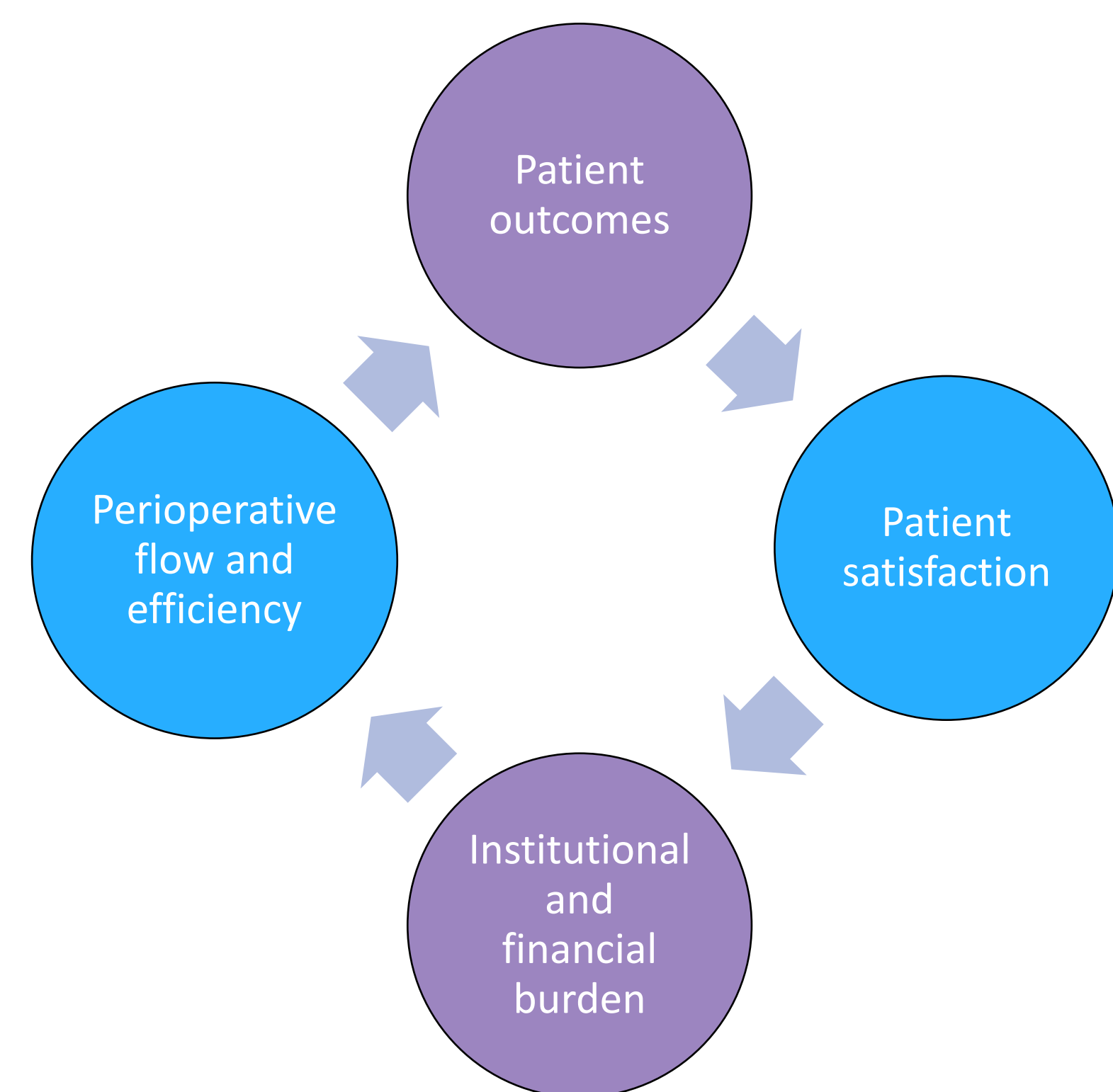
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Background

- Early recognition of patient deterioration and prompt intervention by clinical staff has been shown to be of utmost importance when predicting patient mortality and adverse patient outcomes
- High-risk patients undergoing surgery have an increased risk of morbimortality due to postoperative complications, which are often underrecognized
- In-hospital mortality of surgical patient's ranges from 45-74%
- There is no standardized tool in the preoperative setting to predict a patient's change in disposition postoperatively
- ASA scores are often used, but can be subjective and does not take current physiological status, i.e. vital signs, into account

Purpose

To determine if preoperative NEWS will indicate the need for unexpected escalation of care postoperatively to improve:



A Cohort Study - a retrospective chart review using Cerner Soarian electronic health record and SharePoint surgical schedules

Inclusion criteria: ≥18 years of age, male and female surgical inpatients, at least one documented preoperative NEWS

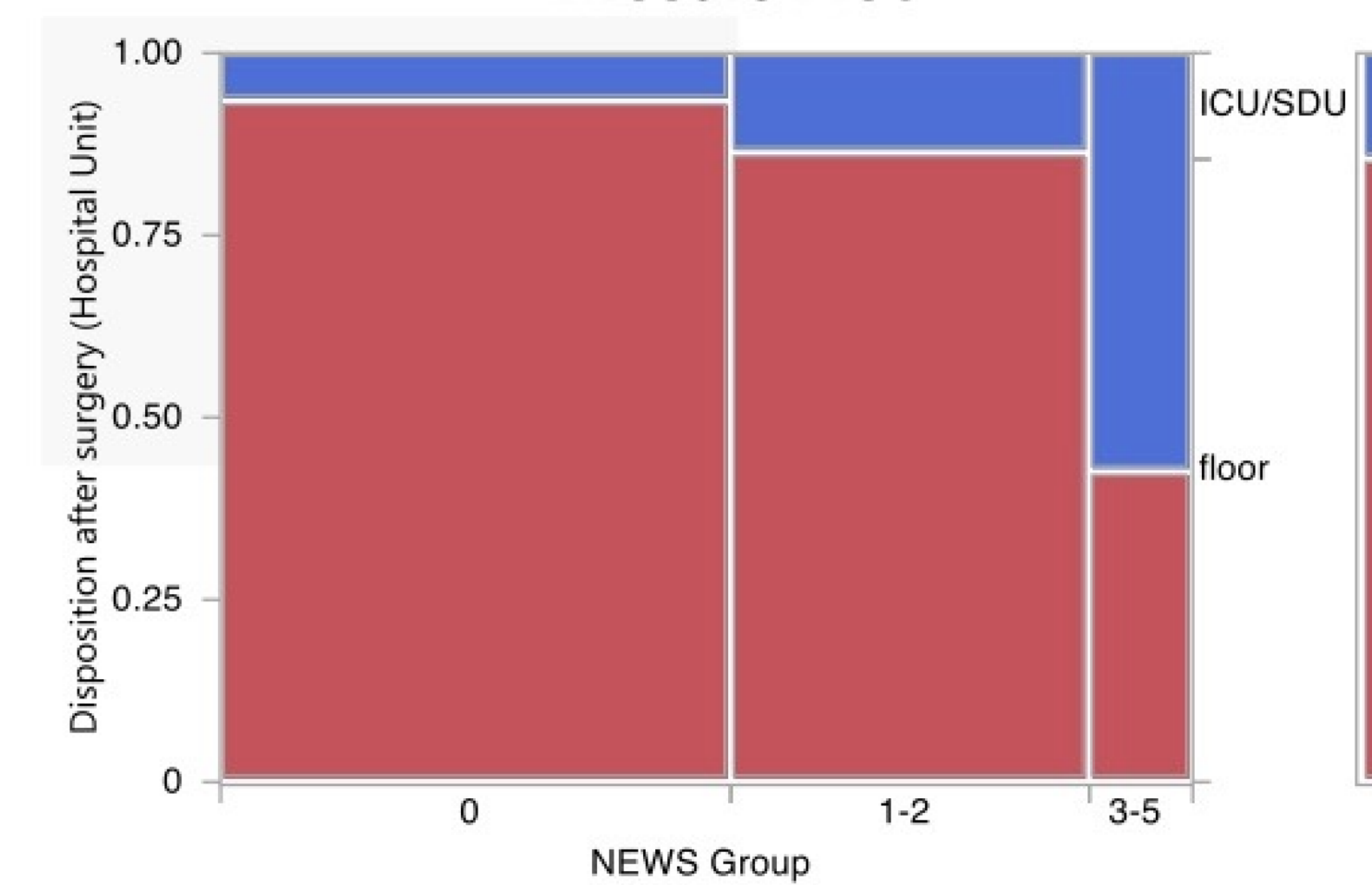
Exclusion criteria: pediatric patients age <18 years of age, cardiac surgical patients, neurosurgical patients, emergent patients

Variables collected: gender assigned at birth, preoperative NEWS, age, type of anesthesia, surgical intervention, BMI, ASA, length of surgery, blood loss, disposition after surgery

Methods

Results

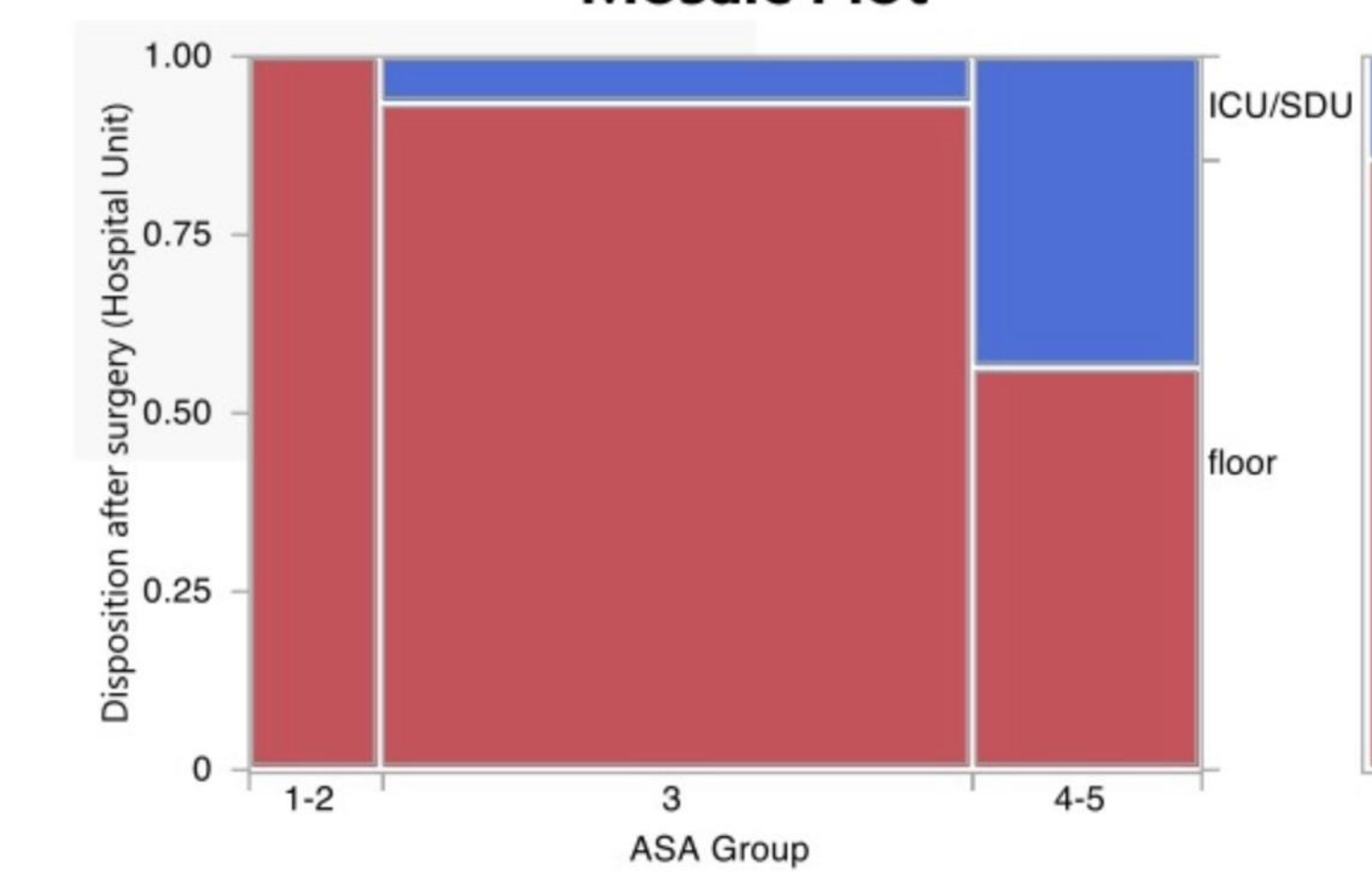
Contingency Analysis of Percentage of Disposition By NEWS Group Mosaic Plot



NEWS Group	Floor		ICU/SDU	
	N	Row %	N	Row %
0	98	93.33%	7	6.67%
1-2	64	86.49%	10	13.51%
3-5	9	42.86%	12	57.14%

Chi-Squared Test for NEWS		
Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	26.845	<.0001*
Pearson	36.057	<.0001*

Contingency Analysis of The Percentage of Disposition By ASA Group Mosaic Plot



ASA Group	Floor		ICU/SDU	
	N	Row %	N	Row %
1-2	28	100.00%	0	0.00%
3	116	93.55%	8	6.45%
4-5	27	56.25%	21	43.75%

Chi-Squared Test for ASA		
Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	40.459	<.0001*
Pearson	44.353	<.0001*

NEWS and Clinical Interpretation Tool

National Early Warning Score (NEWS2)

Respiratory Rate (bpm)	<ul style="list-style-type: none"> • ≤8 (3) • 9-11 (1) • 12-20 (0) • 21-24 (2) • ≥25 (3)
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SpO ₂ (Oxygen Saturation)	<ul style="list-style-type: none"> • ≤91% (3) • 92-93% (2) • 94-95% (1) • ≥96% (0)
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Room Air or Supplemental O ₂	<ul style="list-style-type: none"> • Supplemental O₂ (2) • Room Air (0)
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Temperature	<ul style="list-style-type: none"> • ≤35°C (3) • 35.1°C - 36.0°C (1) • 36.1°C - 38.0°C (0) • 38.1°C - 39.0°C (1) • ≥39.1°C (2)
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Systolic BP (mmHg)	<ul style="list-style-type: none"> • ≤90 (3) • 91-100 (2) • 101-110 (1) • 111-119 (0) • ≥120 (3)
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Pulse (bpm)	<ul style="list-style-type: none"> • ≤40 (3) • 41-50 (1) • 51-90 (0) • 91-110 (1) • 111-130 (2) • ≥131 (3)
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Consciousness	<ul style="list-style-type: none"> • Alert (0) • New-Onset Confusion, Responses to Voice/Pain, or Unresponsive (3)
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NEWS Clinical Interpretation Tool

NEW Score	Clinical Risk	Response
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Aggregate Score 0-4	Low	Continue to Monitor Every 12 Hours or as Ordered
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Red Score Score of 3 in Any Individual Parameter	Low-Medium	<ol style="list-style-type: none"> 1. Reassess Vital Signs and EWS 2. Consider STAT Team Consultation
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Aggregate Score 5-6	Medium	<ol style="list-style-type: none"> 1. Notify Provider 2. Reassess Vital Signs and EWS in One Hour 3. Consider STAT Team Consultation
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Aggregate Score 7 or More	High	Initiate Rapid Response
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Discussion

- There is a significant correlation between increasing NEWS scores and need for escalation of care postoperatively
- There is significant correlation between increasing ASA scores and need for escalation of care postoperatively

*Currently ASA is the primary perioperative risk tool used by anesthesia providers, but our research results demonstrate that NEWS is also a valid risk predictive tool in the surgical population. NEWS is another tool that can be utilized in the perioperative setting to predict the need for escalation of care postoperatively.

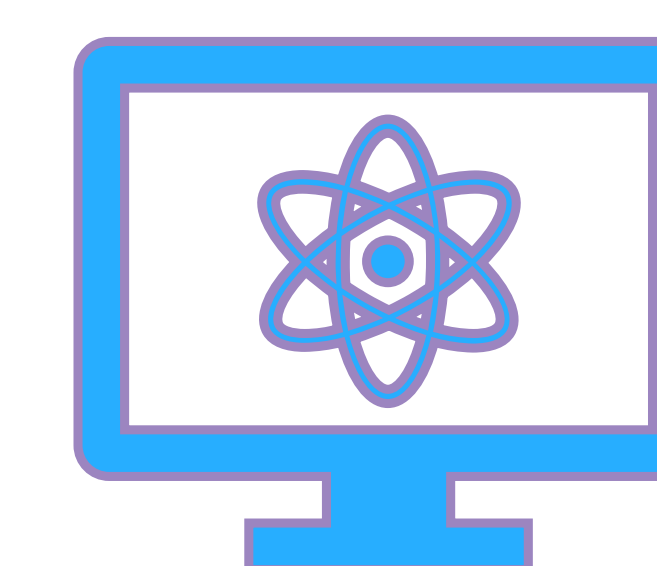


Limitations

- NEWS scores recorded at various times of admission
- Legibility of handwritten anesthesia record
- Accuracy of the NEWS algorithm completion
- Larger sample size to complete a full logistical regression to compare ASA vs. NEWS

Future Research

- Time in PACU correlating to NEWS
- Cost Benefit Analysis of surgical patient's hospitalization
- Complete analysis of secondary outcomes
- Further comparison between variables and NEWS



References