

Improving Patient Surveillance: Instituting a Respiratory Risk Screening Tool

 Wyoming Medical Center

**Sandra Maddux, RN, MSN, CNS-BC, Michelle Giffin, RN,
BSN, & Patti Leglar, RN-C, BSN**



Purpose

To share an evidence-based protocol that has been successfully embedded into the EMR to avert respiratory failure in patients who display signs and symptoms of respiratory compromise



Problem

In 2010, a serious safety event occurred as a result of not intervening before the patient died from respiratory compromise



Failure to Rescue Episode



Significance

Respiratory Failure is a life-threatening condition. As early as eight hours prior to a respiratory failure event, symptoms can be detected warning care providers that the patient is entering a crisis situation



At Risk Populations

- ETOH/substance abuse
- Post sedation/anesthesia
- OSA (obstructive sleep apnea)
- Enteral feedings
- Vomiting and/or failure to manage secretions
- Sepsis, pancreatitis, heart failure, shock, blunt chest & abdominal trauma
- Smoke inhalation, burns and long bone injury or surgery
- Asthmatics, COPD, myopathies
- Recent respiratory infections
- Other due to anatomy anomalies
 - Down's Syndrome, obesity, s/p cervical fusion & open airways (tracheostomy)



Applying the Evidence

Review the literature

Define the parameters for screening

Write the protocol

Embed the screening tool in EMR



Exclusion Criteria

- Those with endotracheal tubes
- Comfort care patients
- Emergency room patients
- Those actively undergoing moderate and deep sedation
- PACU patients



Key Assessments

- Respiratory Rate
- Oxygenation
- Work of Breathing
- Airway and Secretions
- Mentation
- Skin



Screening Parameters

Parameter	Low	Moderate	High
Respiratory Rate	Respiratory Rate 12-20 per min (0)	Less than 12 or Greater than 20 (2)	Less than 8 or Greater than 26 (10)
Oxygenation	R/A - 2LPM (0) 3-4 LMP (1) SpO2 Greater than or equal to 90% (0)	5-9LPM (2) SpO2 85-89% (1)	10+LPM (3) Trach/stoma (10) Artificial Airway* (10) NIVT* (16) SpO2 Less than 85% (3)
Work of Breathing	Full sentences (0) No accessory muscle use (0)	Partial Sentences (1) Upright position (1) Pursed Lips (1) Labored breathing (1) Chest tubes (5)	Single Words (2) Tripod position (2) Accessory muscle use (2)
Airway and Secretions	Able to manage secretions (0)	Structural abnormalities* (2) Difficulty managing secretions(2)	Para/Quads (4) Unable to manage secretions (4)



Screening Parameters cont.

Parameter	Low	Moderate	High
Mentation	LOC at baseline (0) Appears at ease (0) PCA (3)	Agitation/Restlessness/ Anxiety (1) Frequent narcotics (every 4 hours or less) (2) Benzodiazepines (every 4 hours or less) (2) Post sedation/anesthesia in the last 4hrs (2) Epidural (3)	Lethargic (2) Obtunded (4)
Skin	At Baseline (0)	Pale (1) Diaphoretic (1) Cap Refill greater than 3 seconds(1) Peripheral mottling (1)	Cool (2) Clammy (2) Cyanotic (3) Central mottling (4)
SCORE	Low Risk = 0 - 3	Moderate Risk = 4 - 25	High Risk = Greater than 25



Reliability & Validity of Screen

➤ Reliability (consistent)

- Inter-rater first 25 in neonate, pediatrics, & adults

➤ Validity (accurate)

- Content by nursing, respiratory, & medical experts
- Content validity via Root Cause Analysis
 - Evaluated scoring and ability to detect respiratory decompensating
 - Used in over 75,000 observations
- Formal statistical reliability and validity testing of the tool is indicated as the next step

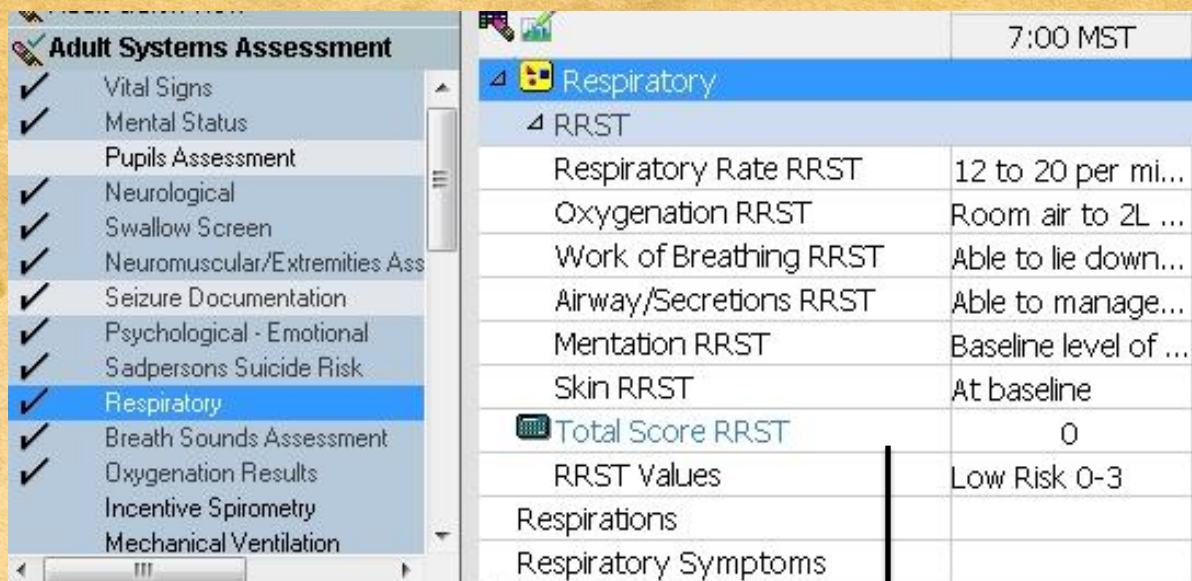


When to Screen

- On admission
- Each shift
- When transferred between units
- Accepted from procedural areas after receiving anesthesia




Embedded Protocol



Adult Systems Assessment		7:00 MST
✓	Vital Signs	
✓	Mental Status	
	Pupils Assessment	
✓	Neurological	
✓	Swallow Screen	
✓	Neuromuscular/Extremities Ass	
✓	Seizure Documentation	
✓	Psychological - Emotional	
✓	Sadpersons Suicide Risk	
✓	Respiratory	
✓	Breath Sounds Assessment	
✓	Oxygenation Results	
	Incentive Spirometry	
	Mechanical Ventilation	

Respiratory	
RRST	
Respiratory Rate RRST	12 to 20 per mi...
Oxygenation RRST	Room air to 2L ...
Work of Breathing RRST	Able to lie down...
Airway/Secretions RRST	Able to manage...
Mentation RRST	Baseline level of ...
Skin RRST	At baseline
Total Score RRST	0
RRST Values	Low Risk 0-3
Respirations	
Respiratory Symptoms	

Total Score RRST

 Respiratory Rate RRST + Oxygenation RRST + Work of Breathing RRST + Airway/Secretions RRST + Mentation RRST + Skin RRST

 [Reference Text](#)

Hyperlinked directly to
written protocol



Key Points in the Protocol

- **Critical Juncture** - the stage at which the patient transitions to the next risk level
 - **Cross monitoring** - a second independent assessment to validate symptomology
 - **Review best practice**-interventions to recover or prevent deterioration



Low Risk Interventions

Score: 0 - 3

- Continue to monitor every shift and review early warning signs of increased oxygen demand
- Give pneumovax as appropriate
- Give flu vaccination as appropriate
- Treat underlying disease state per orders
- Educate patient/family of options for assistance (i.e., Condition H)




Critical Juncture: Low to Moderate Risk

- **Critical Juncture:** *Change in device* to accommodate O2 demand or oxygen flow of up to **4 LPM** from baseline in less than **four hours** or greater than **6 LPM**.
 - Charge nurse and RT notified that patient moved to **Moderate Risk**
 - At the discretion of the nurse to have cross-monitor



Critical Juncture Documentation

▾ Respiratory	<input checked="" type="checkbox"/>
▾ RRST	<input checked="" type="checkbox"/>
Respiratory Rate RRST	
Oxygenation RRST	
Work of Breathing RRST	
Airway/Secretions RRST	
Mentation RRST	
Skin RRST	
 Total Score RRST	
RRST Values	
Critical Juncture	<div style="border: 1px solid black; padding: 5px;"> <p>Critical Juncture ✕</p> <p><input type="checkbox"/> Change in Device</p> <p><input type="checkbox"/> Increased O2 of up 4L in 4 Hrs</p> <p><input type="checkbox"/> O2 Demand Greater than 6L</p> <p><input type="checkbox"/> Requires O2 Greater Than 10L</p> <p><input type="checkbox"/> Other</p> </div>
Actions	



Moderate Risk Interventions

Score: 4-25

In addition to low risk interventions:

- Titrate oxygen to 88-90% (except those who live below)
- Keep patient in position to maintain optimal lung expansion
- Monitor for fluid volume overload
- Consult RT
- Increase observation and assessment frequency
Q4



Critical Juncture: Moderate to High Risk

- **Critical Juncture:** *Change in device to accommodate O2 demand or oxygen flow greater than **10 LPM***
 - Notify physician/designee of **High Risk** using SBAR
 - Notify Charge of high Risk & need for cross monitoring
 - Call Rapid Response if:
 - No MD response to RN within 15 minutes
 - Condition worsens
 - Need immediate assistance (code blue for intubation)
 - Transfer to higher level of care if patient requires cardiac monitoring/ centrally monitored continuous oximetry or specialized nursing care



Actions Documentation

Respiratory	<input checked="" type="checkbox"/>										
RRST	<input checked="" type="checkbox"/>										
Respiratory Rate RRST											
Oxygenation RRST											
Work of Breathing RRST											
Airway/Secretions RRST											
Mentation RRST											
Skin RRST											
Total Score RRST											
RRST Values											
Critical Juncture											
Actions	<table border="1"><tr><td>Actions</td><td><input checked="" type="checkbox"/></td></tr><tr><td><input type="checkbox"/> Notify MD using SBAR</td><td></td></tr><tr><td><input type="checkbox"/> Called for Cross Monitoring</td><td></td></tr><tr><td><input type="checkbox"/> Called Rapid Response</td><td></td></tr><tr><td><input type="checkbox"/> Called Code Blue</td><td></td></tr></table>	Actions	<input checked="" type="checkbox"/>	<input type="checkbox"/> Notify MD using SBAR		<input type="checkbox"/> Called for Cross Monitoring		<input type="checkbox"/> Called Rapid Response		<input type="checkbox"/> Called Code Blue	
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<input type="checkbox"/> Called for Cross Monitoring											
<input type="checkbox"/> Called Rapid Response											
<input type="checkbox"/> Called Code Blue											



High Risk Interventions

Score: 26+

In addition to Moderate Risk Interventions:

- Increase surveillance Q2 (room placement)
- Notify charge nurse
- Collaborate with RT
- Move to higher level of care with fluctuation in symptoms
- Provide emotional support and stay with patient until stabilized
- Consider Morphine or Anxiolytic in acute phase
- All high risk patients **REQUIRE** RN/RT presence during transport
- Call Code Blue, if airway or oxygen status compromised



Nine Month Measurement

Q2 2011

- 26
Respiratory
Events
initiating
Code Actions

Q3 2011

- 12
Respiratory
Events
initiating
Code Actions

Q4 2011

- 8
Respiratory
Events
initiating
Code Actions



Clinical Outcome

- **70%** reduction in respiratory events triggering code situations:
 - Rapid Response
 - Code Blue
 - Condition H

- **No failure to rescue episodes since implementation**



Mini-Root Cause Analysis

- For each code situation (Blue, RRT, Condition H)
- Conduct an incident description
- Determine if compromised respiratory status was a contributing factor to the incident
- Review RRST scores and interventions to verify standard of practice adherence
- Initially coached staff during first year of implementation
- Now when standard not met incident sent to Peer Review



IMPLICATIONS FOR PRACTICE

- Nurses play a significant role in patient rescue
 - The RRST is easy to use and sensitive in detecting early respiratory failure
 - The EMR serves as a platform for standardizing practice and guiding nurses to early detection & intervention

