

Respiratory Distress Observation Scale

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Abstract

RDOS assesses dyspnea in patients unable to self-report symptoms. Validated in palliative and ICU populations, cutoffs of ≥ 3 –4 identify moderate to severe dyspnea. ICU adaptations (intensive care-RDOS, mechanical ventilation-RDOS) correlate with self-reported dyspnea and inspiratory electromyography (EMG) activity, showing promise for the application of RDOS to non-communicative patients. No studies thus far have determined RDOS cutoffs for intervenable outcomes like hypoxemia. As such, RDOS may guide symptom management but has not been shown to necessarily improve physiological or patient-centered endpoints.

WHEN TO USE

The Respiratory Distress Observation Scale (RDOS) can be used to assess dyspnea in palliative care and/or intensive care unit (ICU) patients who are unable to self-report symptoms.

PEARLS/PITFALLS

Pearls

Observer training improves reliability: Interrater reliability of RDOS improves when staff receive structured training on identifying behavioral and respiratory signs of distress. Institutions implementing RDOS should include standardized observer education.

Useful for tracking response to therapy: Serial RDOS assessments can help monitor response to interventions (e.g., opioids, anxiolytics, oxygen), offering a practical tool for evaluating symptom trajectory.

Complementary to physiologic monitoring: RDOS can supplement vital signs and oxygen saturation, helping clinicians identify distress earlier, especially when physiologic measures appear stable.

Pitfalls

Although RDOS is inversely correlated with oxygen saturation, no RDOS cutoff has been developed for providing supplemental oxygen.

RDOS should *not* be used in patients who are paralyzed due to either neuromuscular blocking agents or neuromuscular disease.

Data is limited on the performance of RDOS in non-communicative patients, as initial validation studies were carried out primarily utilizing patients with sufficient cognition to provide self-reports of dyspnea; recent modified versions of RDOS have shown correlation with dyspnea surrogates in this patient population.

Limited external validation: Most validation studies have been small, single-center, and conducted in palliative settings. Therefore, generalizability to diverse ICU populations remains uncertain.

Potential for confounding by sedation or delirium: Sedative or antipsychotic use may blunt observable behaviors (e.g., facial expression, restlessness), leading to falsely low scores.

Not a diagnostic tool: High RDOS suggests respiratory distress but does not differentiate between etiologies such as hypoxia, hypercapnia, or anxiety; it should always be interpreted within clinical context.

WHY USE

RDOS inputs are easily observable and can provide clinicians information on the respiratory status of patients. RDOS is correlated with dyspnea but not pain, allowing clinicians to distinguish between two common causes of discomfort.

ADVICE

While high RDOS scores should prompt consideration of treatment for dyspnea, RDOS does not help to identify a cause of dyspnea. Keep a wide differential diagnosis

and consider other reversible etiologies prior to palliative interventions.

MANAGEMENT

RDOS is an eight-variable scale with scores ranging from 0 to 16. The optimal cutoff point has not been definitively set, but the most recent validation study found $\text{RDOS} \geq 4$ performed best in identifying patients with moderate to severe dyspnea.

CRITICAL ACTIONS

Consider palliative treatments to support work of breathing and patient comfort in patients with $\text{RDOS} \geq 4$, such as pain medication and/or supplemental oxygen.

EVIDENCE APPRAISAL

The original study proposing a seven-variable version RDOS utilized a 210-subject convenience sample of pulmonary rehabilitation and postoperative pain patients as well as healthy volunteers to establish the construct and discriminant validity of the scale compared to self-reports of dyspnea and pain. An eighth variable, paradoxical breathing, was added prior to the second validation study conducted by the original creator, which examined 99 palliative care patients with lung pathology such as COPD, pneumonia, congestive heart failure (CHF), or lung cancer. This study showed a positive correlation between RDOS and self-reported dyspnea and an inverse correlation between RDOS and oxygen saturation. A cutoff of ≥ 3 was originally proposed for identifying moderate to severe dyspnea as measured by self-report. A subsequent validation study of 122 palliative care patients in Singapore tested multiple cutoffs ranging from 2 to 5 for moderate to severe dyspnea, and found that a cutoff of ≥ 4 had improved test characteristics for identifying this group of patients. A Japanese version of RDOS was also validated in the ICU setting with 128 patients. No studies to date have assessed for RDOS cutoffs to predict intervenable sequelae of moderate to severe dyspnea, such as hypoxemia. As such, RDOS may be a tool for guiding symptom management rather than one proven to improve patient-centered outcomes.

The studies above have relatively small sample sizes and wide heterogeneity in patient populations, ranging from the ICU to outpatient pulmonary rehabilitation patients. Physiological responses to pulmonary interventions may differ significantly between these groups. Further validation is needed in each of these populations.

Potential cultural or linguistic biases were partially accounted for when translating the RDOS, but the Japanese study required re-translation of three items on the

scale, underscoring the difficulty of accurate translation in this context.

Modifications to better adapt the RDOS scale for ICU patients include the intensive care RDOS (IC-RDOS) and mechanical ventilation RDOS (MV-RDOS), both five-variable scales. The MV-RDOS has the most robust validation in both communicative and non-communicative patients, demonstrating positive correlations with both self-reported dyspnea and inspiratory EMG activity.

FACTS AND FIGURES

RDOS Score Cutoffs to Identify Patients with Moderate and Severe Dyspnea (from Zhuang et al):

RDOS Score Cutoff	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value	Youden's Index
≥ 2	.953	.276	.592	.842	.229
≥ 3	.891	.621	.722	.837	.512
≥ 4	.766	.862	.860	.769	.628
≥ 5	.641	.931	.911	.701	.572

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