PEDIATRIC pre-Hospital Respiratory Emergency Encounters: Assessment & Intervention Relationships (PHREE AIR)

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Introduction:

The National EMS Quality Alliance (NEMSQA) states that, "Performing the respiratory assessment on the patient is the first step to determining if additional clinical interventions are necessary, and it is important that this process in care be measured". However, little is known about the relationship with the performance of a respiratory assessment and patient outcomes.

Objective:

To determine if documented pediatric respiratory assessments are associated with increased interventions and improved patient outcomes.

Methods:

This retrospective cohort study evaluated all EMS patient care records (PCR) from the 2021 ESO Data Collaborative public use dataset. The cohort consisted of all patients under the age of 18 years of age with a primary or secondary impression that was respiratory in nature from January 1, 2021, to December 31, 2021. The analysis was limited to 911 responses. NEMSQA defines a respiratory assessment as evaluating respiratory rate (RR) and pulse oximetry (SpO2). EMS interventions were performed if at least one respiratory medication or procedure was documented. Descriptive statistics were calculated and univariable logistic regression were performed.

Affiliations:

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This study found that **respiratory assessments**, documented by EMS clinicians, **were associated with an increased** odds of prehospital respiratory **medication administration** and/or **respiratory procedure** performance.

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Patients **without** documented respiratory assessments were **less likely** to receive prehospital **treatment**, but **just as likely to need hospital admission**.

We ♥ Tiny Humans **#DoTheAssessment** #PHREEAIR

Results:

There were 9,430,066 9-1-1 responses in 2021. Of those, 50,004 were pediatric PCRs with documented "acute respiratory distress" from 1645 EMS agencies; 96% (48,100) had a NEMSQA-defined respiratory assessment documented at least once in a call. Patients with a NEMSQA-defined respiratory assessment had over 7 times higher odds of an EMS intervention being performed (OR: 7.5, 95% CI 6.34-8.90). Patients who had a respiratory assessment performed also had 3 times higher odds of EMS transport (OR: 3.13, 95% CI: 2.84-3.45). There was no difference in admissions (OR: 0.5 CI 0.19-1.27) or mortality (OR: 0.26, 95% CI: 0.06-1.11) when comparing those who had an assessment and those who did not.

Interventions

(medications or procedures)

	Received Assessment	No Assessment*	Total
Yes Intervention	18,634 (38%)	147 (7%)	18,781
No Intervention	29,476 (61%)	1,747 (92%)	31,223
Total	48,110	1,894	50,004

*no assessment is defined as either no pulse ox or no respiratory rate or both

OR 7.51 (CI 6.34-8.90)

Transport

	Received Assessment	No Assessment*	Total
Transport	33,143 (69%)	731 (42%)	33,874
Non-transport	14,705 (31%)	1,016 (58%)	15,721
Total	47,848	1,747	49,595

*no assessment is defined as either no pulse ox or no respiratory rate or both

OR 3.13 (CI 2.83-3.45)

Admissions

	Received Assessment	No Assessment*	Total
Admitted/Transferred	348 (6%)	5 (12%)	353
Discharged from ED	5,330 (94%)	38 (88%)	5,368
Total	5,678	43	5,721

*no assessment is defined as either no pulse ox or no respiratory rate or both
Table excludes those without hospital outcome data

OR 0.50 (CI 0.19-1.27)

Mortality

	Received Assessment	No Assessment*	Total
Lived	5,349 (99%)	38 (95%)	5,387
Died	74 (1%)	2 (5%)	76
Total	5,423	40	5,463

*no assessment is defined as either no pulse ox or no respiratory rate or both
Table excludes those without hospital outcome data

OR 0.26 (CI 0.06-1.11)