

SpO₂/FiO₂ Reference Ranges for Grading Respiratory Distress Syndrome in Moderate-Late Preterm Infants

Northern Health

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RESEARCH WEEK
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INSPIRED RESEARCHERS
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BACKGROUND

Assessment of **Respiratory Distress Syndrome (RDS)** - a neonatal disease of prematurity (1) - involves CXR (gold standard), clinical signs, and blood gas but can be imprecise.

The **SpO₂/FiO₂ ratio (SFR)** is a pulse oximetry-based tool (2) which may help RDS severity diagnosis in moderate-late preterm infants

METHODS

Eligible (n=273)

30+0 to 36+6 weeks gestational age (GA)
On CPAP and/or hi-flow (Resp. support)

Exclude

Cyanotic heart disease (n=2)
Alt. indication for CPAP/hi-flow (n=1)
Missing data (n=18)

Study Cohort (n=252)

Fig 1. Study Cohort Selection

COLLECT (Retrospective): Demographics, CXR, clinical severity score [CIRTG], blood gas, SFR.

DEVELOP SFR reference ranges from 50% IQRs

ANALYSE 1) Describe/compare CXR severity categories; 2) Assess SFR range accuracy.

RESULTS

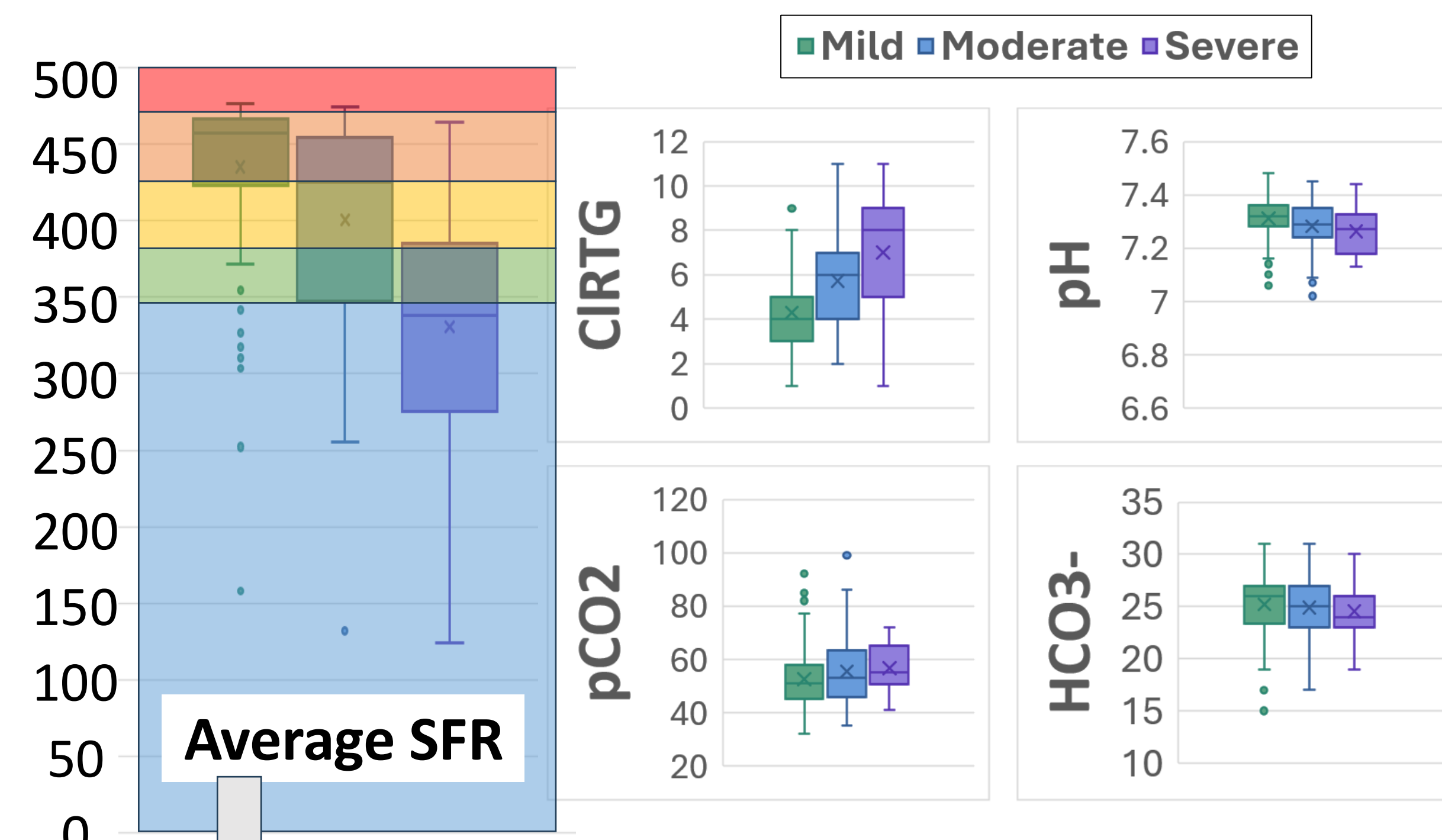


Fig. 2: 50% IQRs for Average SFR, CIRTg, pH, pCO₂, HCO₃⁻

	Reference Range (SFR)	Sensitivity	Specificity
Expanded Mild	≥455	56.8%	76.8%
Mild-Mod	423-454	24.4%	92.3%
Mod	386-424	12.2%	89.5%
Mod-Severe	347-385	13.7%	95.5%
Expanded Severe	≤346	53.8%	85.5%

Tab 2: Accuracy (Sensitivity & Specificity) of Best Consensus SFR ranges for RDS CXR severity

DISCUSSION

- SFR has **high specificity & moderate sensitivity** for **severe RDS**
- Low SFR can support severe RDS diagnosis and escalation of care

FUTURE DIRECTIONS:

- Map SFR to lung ultrasound severity to account for CXR variability (3)
- Assess SFR for tracking RDS progression

CONCLUSION

The SFR is a simple, non-invasive test which **complements global assessment (clinical signs & symptoms)** and guides **bedside decision making** in RDS.

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