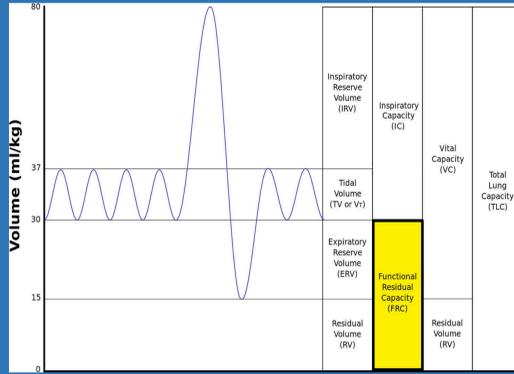


Validating a novel pulmonary health monitor's non-invasive measurement of FRC

Presenter: Aye Chan Moe and Morgan Chien-Hale

Background

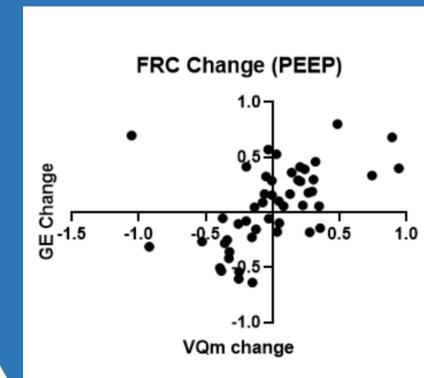
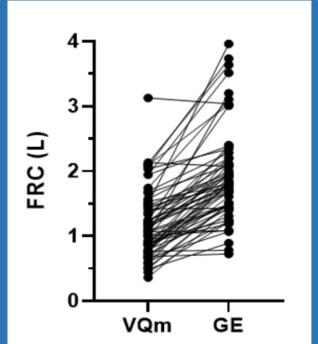
- Functional Residual Capacity (FRC): lung volume at the end of passive expiration
- Can help optimize respiratory settings during a mechanical ventilation¹
- Standard FRC measurement (nitrogen wash-in/washout technique) is lengthy and requires a step-change in FiO₂, posing risk for some patients



There is good trending between PHM and the standard nitrogen washout method in FRC measurements.

Results

- Paired t-test (n=66)
- Mean difference of 0.76 L between paired values
- Moderate correlation (r=0.671) with a p value of <0.0001

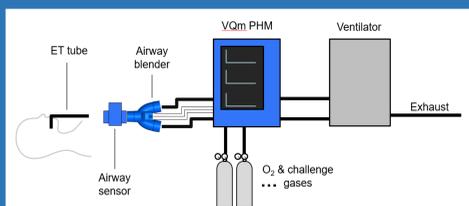


- Concordance
- 0% exclusion zone
- 73%, good trending

Objective: To evaluate non-invasive measures of FRC by a new pulmonary function monitor (VQm PHM™) compared to standard nitrogen washout measurements

Methods

- IRB approved study with written informed consent
- Adult patients requiring general anesthesia



- PHM inserted into circuit between patient and GE CARESCAPE™ ventilator

- Paired comparison of FRC measurements between PHM and GE
- Calculated nonparametric concordance



Insertion of VQm PHM™ into the breathing circuit

Discussion

- Good trending and moderate correlation in FRC measurements between PHM and nitrogen washout
- Inserting PHM into circuit introduces FRC discrepancy
- Change in circuit setup reduces discrepancy to ~0.7L
- Current data will assist revision of model and improvement in FRC calculation
- Next step: modified protocol to characterize magnitude of error with GE CARESCAPE™ within circuit

References

1. Odenstedt, H., Stenqvist, O. and Lundin, S. (2002). Clinical evaluation of a partial CO₂ rebreathing technique for cardiac output monitoring in critically ill patients. Acta Anaesthesiologica Scandinavica, 46: 152-159.

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