ATS 2019 Highlights

Respiratory Structure and Function Early Career Professionals

Get to know members of the RSF Assembly

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Is your research clinical, basic science or translational?

Basic and translational science.

Tell us about your research?

My research focus is physical modeling and statistical estimation for exhaled nitric oxide (FeNO). The basic science consists of developing computational methods for modeling FeNO which incorporate continuously varying flow (exhalation) rates, whereas most existing approaches assume the flow rate is fixed. The translational aspect entails the use of cutting edge statistical methods to enable estimation of clinically relevant physiological parameters from the available data. In addition to analyzing existing FeNO samples, we are also developing new sampling protocols which have the potential to greatly simplify the process.

Where do you see yourself in 5 years?

My goals in the next few years include securing a position as an independent PI at a research institution and forming a research team of my own. Ideally, 5 years from now a postdoc from my own lab will be an early career professional recognized by the RSF Assembly.

What do you find is the major benefit of RSF Assembly Membership?

The RSF Assembly represents an unparalleled range and depth of knowledge and experience in respiratory physiology, and getting to interact and network with this group at the annual ATS conference is both an outstanding career and intellectual opportunity.

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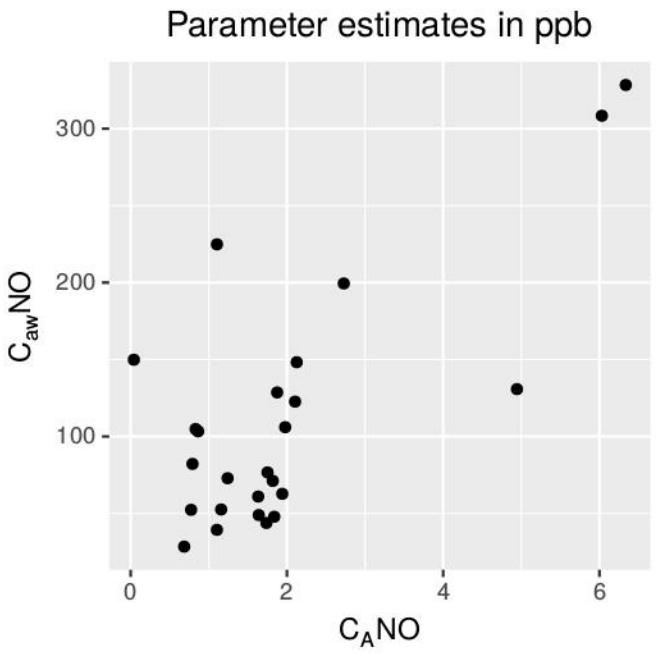

Feasibility of Tidal Breath Sampling for Estimation of Parameters Partitioning the Physiological Sources of Exhaled Nitric Oxide

OBJECTIVE: To assess the feasibility of tidal breath data collection for use in estimating partitioned sources of FeNO.
METHODS: As an adjunct to the ongoing Integrative Genetic Approaches to Gene-Air Pollution Interactions in Asthma (GAP) study of young adults (ages 18+), subjects were asked to perform 60 seconds of tidal breathing subsequent to the existing extended protocol. Subjects were instructed to breathe normally and were allowed to in/exhale at whatever rate and frequency was comfortable. FeNO was measured using the ECO MEDICS ANALYZER CLD88 with the optional DENOX 88 attachment to provide NO free air during inhalation.
RESULTS: From April-October 2018 a total of n=27 subjects were asked to perform the tidal breathing protocol. Every subject was able to complete the protocol on the first try, except for one subject who had to repeat the sampling due to an incorrect machine configuration. Two samples were excluded from analysis due to technician error in specifying the sampling frequency. For the remaining 25 samples estimates of C_ANO and $C_{aw}NO$ were calculated and are illustrated in the accompanying scatter plot.
CONCLUSIONS: Tidal breath FeNO sampling was straightforward for both subjects and technicians, as it simultaneously reduced the compliance burden and took less time than existing extended protocols. In addition to simplifying sample collection, this may enable testing in groups such as young children and the elderly who are unable to complete existing protocols, although more study on the feasibility of testing in these populations and the clinical implications of the partitioned estimates is needed.

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