

Model-based approaches for improved diagnostic and therapeutic strategies for sleep-related breathing disorders: Current and Future Directions

Focused Study Group Meeting

Sunday, June 10, 2012

8:30am -12pm - Sheraton Hotel, Boston, MA

Moderator: Michael C.K. Khoo, PhD

This is one of a series of “focused study groups” sponsored by the USC Biomedical Simulations Resource (a center funded by NIH-NIBIB), aimed at “facilitating the rational formulation of future research directions in selected fields of biomedical science and technology by engaging experts within the peer community in a constructive process of thoughtful and far-sighted deliberation”.

Tentative Program & Topics for Discussion:

8:30 – 9:00 am: Continental Breakfast

9:00 – 9:30 am: Introduction; Purpose of the Meeting

9:30 – 11:00 am: Survey of past & contemporary efforts in modeling as applied to SRBD

- Has modeling contributed towards advancing the field?
- Models of ventilatory control instability; simulation models vs “minimal” models
- Estimation of loop gain – is loop gain relevant?
- Models of upper airway collapse and pharyngeal flow dynamics
- Cheyne-Stokes breathing – importance of modeling cerebral blood flow
- Modeling respiratory-cardiovascular interactions – acute and chronic effects of SRBD
- Modeling effects of SRBD on glucose metabolism

11:00 – 12:30pm: Recent and future developments in SRBD-related modeling

- Using measurements from more recent technologies (eg. PAT)
- Modeling the progression of disease
- Modeling the effects of intermittent hypoxia and ANS fluctuations on endothelial function & inflammation
- Diagnosing SRBD without sleep studies
- Development of “smart” therapeutic strategies for bilevel PAP/ventilators
- Predictive modeling approaches

Invited Participants

Dempsey, Jerome

University of Wisconsin

Edwards, Bradley

Harvard Medical School

Horner, Richard

University of Toronto

Jocono, Frank

Western Reserve University

Khoo, Michael

University of Southern California

Malhotra, Atul

Harvard Medical School

Penzel, Thomas

University of Berlin

Sands, Scott

Harvard Medical School

Terrill, Philip

University of Queensland

Trinder, John

University of Melbourne

Vergheze, George

Massachusetts Institute of Technology

Wellman, Andrew

Harvard Medical School

White, David

Philips Home Healthcare Solutions

Younes, Magdy

University of Manitoba