



The 9th International
Conference on
Complexity in Acute Illness
September 10-12, 2010, Atlanta, GA



Program for the 9th International Conference on Complexity in Acute Illness

Conference location:

Atlanta Gateway Marriott Hotel 2077 Convention Center Concourse College Park, GA 30337 -
(404) 763-1544

Friday, September 10

8:00 – 8:45 AM: Breakfast

8:45 – 9:00 AM: Welcome and Introductory Remarks (Cohen/Batchinsky)

Morning Session. Title: Unraveling fundamental laws in Biology: Dynamic models and biological interactions during acute illness

Moderator: Tim Buchman. Panelists: Benjamin Mann, Ary Goldberger, Chris Macedonia, Atul Butte.

9:00 – 9:25 AM: Benjamin Mann, title: "On Dirac limits and a new point of view on Mathematical Biology"

9:25– 9:50 AM: Chris Macedonia, title: Biochronicity.

9:50 – 10:15 AM: Ary Goldberger: The Breakdown of Spatio-Temporal Complexity in Acute Illness: Toward Dynamical Biomarkers in the ICU.

10:15 –10:40 AM: Michael W. Deem: Spontaneous Emergence of Modularity as a Law in Biology.

10:40 – 11:05 AM: Patrick Norris: From Data Capture to Decision Support: The Past, Present, and Future of SIMON.

11:05 – 12:00 Questions and Free discussion (moderator and experts)

12:00 – 1:00 PM: Lunch

Afternoon Session 1. Title: Monitoring Biological Control and Regulation:

Moderator: John Karemaker PhD Panelists: Bruce West; Dwain Eckberg, USA; Tom Kuusela, Finland, John Doyle, USA).

1:00 – 1:20 PM: John Karemaker: Overview of the cardiovascular regulatory system. Blood pressure variability.

1:20 – 1:40 PM: Dwain Eckberg: Measuring cardiovascular regulation using heart rate variability analysis: what it is and what it is not.

1:40 – 2:00 Bruce West: Semantics of complexity: implications for understanding control in physiology

2:00 – 2:20 Tom Kuusela: Measuring cardiovascular control using tools from nonlinear dynamics: from physics to physiology and back.

2:20 – 2:40 Ted Dick, Rishi Dhingra, Frank Jacono, Christopher G. Wilson, Kenneth A. Loparo, Mikkel Fishman and Ilya Rybak (Drexel University): Breathing Pattern Variability: Neural Mechanisms & Modeling.

2:40 – 3:00 John Doyle: Cardiovascular control and regulation: from mathematics to physiology and back.

3:00 – 3:30 Questions and Free Discussion (moderator and experts). Refreshments.

Afternoon Session 2. Title: Invited Overview Talk: Modeling methods and tools

Moderator: Gary An Panelists: Ioannis Androulakis, Scott Diamond, Eberhard Voit, Yoram Vodovotz.

3:30 – 3:50 Gary An: Characterization of fundamental aspects of biology with abstract mathematics: Category Theory as a pathway for dynamic computational modeling of biological systems.

3:50 – 4:10 Ioannis Androulakis: Towards a Mechanistic Understanding of Inflammation and Physiologic Variability

4:10 – 4:30 Scott Diamond: Novel Methods and Approaches to Modeling Coagulation

4:30 – 4:50 Eberhard Voit, Weiwei Yin : Systems Analysis of the Role of Bone Morphogenic Protein 4 in Endothelial Inflammation.

4:50 – 5:10 Yoram Vodovotz: Computational Models of Inflammation: Translational Applications to Acute Illness

5:10 – 6:00 Questions and Free Discussion (moderator and experts). Refreshments.

6:00 – 7:00 Poster Session (Dinner at posters) Expert review of posters.

Chairs: Gilles Clermont, Sven Zenker.

7:00 PM + /free time

Saturday, September 11

7:00 – 8:00 AM: Breakfast

Morning Session.

Title: Multidisciplinary Translational Research: From Fundamental Science to Practice. Life-saving interventions and other clinical outcome measures.

Moderator: Charles Wade, PhD, Mitch Cohen MD.

Panelists: John Holcomb, Edmund Neugebauer, Leopoldo Cancio, Jose Salinas, Andriy Batchinsky, David Baer.

8:00 - 8:20 John Holcomb: Clinical Outcome Measures.

8:20- 8:40 Leopoldo C. Cancio: Detecting the need for LSIs using biosensor-derived data

8:40 - 9:00 Jose Salinas: Development of a Decision Support Framework to Improve Time to Administration of LSIs

9:00 - 9:20 Andriy Batchinsky: Tapering off Mechanical Ventilation: Objective Criteria for Weaning and Artificial Lung Support.

9:20 -9:40 David Baer: Rehabilitation of combat warriors and return to duty

9:40 – 10:00 Edmund Neugebauer: Quality of life as an outcome measure in Trauma

10:00 – 10:20 Mitchell Cohen TDB

10:20 - 11:00 AM: Discussion (Dr. Wade and all co-chairs)

11:00 – 12:00 Presentations by Industry TBD

12:00 – 1:00 PM: Lunch

Summit. Managing Information Flow at the Bedside: Toward Standardizing Clinical Use of Biological Signals

1:00 – 1:45 PM: Keynote: Integration of biomedical informatics to clinical medicine. Perspective of the end-user of the Future. Marek Malik, UK

Afternoon Session 2. Title: Managing Information Flow at the Bedside: Current Monitoring Systems

Moderator: Brahm Goldstein. Panelists: Marek Malik, George Moody, Randall Moorman, Andrew Seely, Soojin Park.

2:00 – 2:20 PM: Brahm Goldstein: Multivariate assessment of patient status at the Bedside

2:20 - 2:40 Randall Moorman Topic: Continuous risk prediction at the bedside: early diagnosis of sepsis in premature infants

2:40 – 3:00 Jan Zebrowski: Stochastic analysis of heart rate variability: asymmetry, respiration and echocardiography parameters in hypertrophic cardiomyopathy

3:00 – 3:20 Soojin Park Data visualization: Design and Evaluation of User Interfaces within the ICU workflow.

3:20 – 3:40 Andrew Seely (Ottawa Hospital Research Institute): Development and application of multiorgan variability monitoring.

3:40 - 4:00 Ivaylo Hristov: Assessment of signal quality: implications for continuous monitoring at the bedside.

4:00 – 4:20 George Moody: Progress in forecasting, shared data use and open engineering challenges in critical care

4:20 – 5:00 Discussion/Refreshments

Afternoon Session 2 Breakout sessions.

5:00-6:30 Breakout session 1

Topic: Regulatory issues with biosensor-derived data. Data capture, storage, integration and assessment. Web survey results presentation and discussion.

Leaders: Jose Salinas and Patrick Norris.

Panel: Michael O'Reilly (Masimo), Mark Darrah, George Moody USA, Matt Hanson.

5:00-6:30 Breakout session 2

Topic: Development of methodological standards for use of physiologic waveform data in the clinical setting.

Leaders: Brahm Goldstein and Andriy Batchinsky

Panel: Randall Moorman, Ivaylo Hristov, Anton Burykin, Tom Kuusela, Dwain Eckberg, Madalena Costa, Andrew Seely.

7:00 PM Gala dinner

Sunday, September 12

7:00 – 8:00 AM: Breakfast

Session 1: Requirements to the next generation monitoring systems.

Session Leaders: Marek Malik and Brahm Goldstein.

8:00 – 9:00 AM: Requirements to the next generation monitoring systems.

9:00 – 9:30 AM: Discussion/refreshments

Session 2. Session Leaders: Tim Buchman and Yoram Vodovotz

9:30 – 10:30 AM: Discussion of conference proceedings and position manuscript.

10:30 – 11:00 PM: Boxed lunch/adjourn