

# Day 1

8:00-8:10 Welcome Howard Federoff

8:10-8:45 Keynote Joachim Sturmberg

Session 1 (8:45am-12:00pm)

Title: Foundations of Systems Medicine

Session Chair: Mark Smith

8:45-9:15 Keynote Howard Federoff

9:15-9:30 Henrik Vogt Systems medicine - holistic and personalized in a humanistic sense?

9:30-9:45 S. Lee Hong Complicated vs. Complex, Disease vs. Illness: Rethinking Diagnosis, Therapy, and Restoring Health

9:45-10:00 El-Sayed AM A system for systems epidemiology: The example of inference from agent-based models

10:15-10:15 Morning Tea & Poster Viewing

10:15-10:30 Martin Konitzer Complexity and Risk in Family Medicine's Interdisciplinary Approach Epidemiology

10:30-10:45 Sonali Vaid Complexity Science and Rabies Control. Applying complexity science to understand the spread and mitigation of a public health problem

10:45-11:15 James C. Palmer The Human Processual Interdependent Phenotype: A Complexity Sciences contribution to the Theoretical Foundations of Systems based Medicine

11:15-11:30 Tom Staiger Anticipation in Complex Systems: Potential Implications for Improving Safety and Quality in Healthcare

11:30-12:00 Panel Moderator: Howard Federoff

12:00-1:00 Lunch and Roundtables

Session 2a (1:00-3:00pm)

Title: Disease Complexity - Physiology

Session Chair: Frances Griffith

01:00-1:30 Keynote Bruce West Thinking About Complexity for Medicine

1:30-2:00 Keynote Andrew Seely Monitoring Variability and Complexity at the Bedside

2:00-2:15 Henry Heng Heterogeneity mediated system complexity: the ultimate challenge for studying common and complex diseases

2:15-2:30 Martin Picard A bioenergetic origin of disease complexity

2:30-3:00 Panel Moderator: Brian Castellani

3:00-3:30 Afternoon Tea & Poster Viewing

Session 2b (3:30-5:00pm)

Title: Disease Complexity - Clinical

Session Chair: Hakima Amri

3:30-4:00 Keynote Carmel Martin Multimorbidity – Through a Glass Darkly

12 min presentations

4:00-4:15	12 min presentations	Brian Castellani	Modeling the Temporal Dynamics/Trajectories of Depression
4:15-4:30		David Katerndahl	Quantitatively demonstrating the complex nature of partner violence
4:30-4:45		David Katerndahl	Viewing mental health through the lens of complexity science
4:45-5:00		Jeanette M. Bennett	Depression: Not just a top-down phenomenon
5:00-5:30		Panel	<b>Moderator:</b> Joachim Sturmborg

5:30-6:00 Break & Poster Viewing

Poster Session (6:00-7:30pm) - Posters , Cheese and Wine

Session Chair: Rene Crichlow

The Complex Nature of Health	Robert Eyre	Social Networks and Health: Spreading of depressive symptoms over adolescent friendship networks
	William M. Taylor	A Complexity Definition of Health
	Krithika Bhuvaneshwar	G-DOC <i>Plus</i> – the next generation systems medicine platform for precision Medicine
	Carmel M Martin	Taxonomic ‘Complexity’! Complex versus Complex adaptive/nonlinear concepts in evaluative primary care research
	Henry White	Mapping Complex Co-morbidities
<b>Moderator: Lee Hong</b>		
Technology	Frances Griffiths	The potential for digital communication to improve access to UK National Health Service (NHS) General Practice by marginalised groups: a realist review
	Naiem T Issa	Net-TMFS: Novel Computational Platform for Drug Discovery and Repurposing that Integrates Systems Pharmacology and Metabolite Signatures
	Abhishek Pandey	Reducing the Complexity of Clinical -Omics Reporting Using the Syapse Semantic Data Platform
	Francis Griffiths	Improving health outcomes for young people with long term conditions: the role of digital communication in current and future patient-clinician communication for UK National Health Service (NHS) providers of specialist clinical services: The LYNC study.
<b>Moderator: Martin Picard</b>		
Organizational Learning	Rick Botelho	Design Health Movements: Creating Catalytic Innovation for Transformational Leadership Development
	Andrew S. Valeras	A Family Medicine curriculum to teach the role of complexity science in healthcare
	Nneka Mokwunye	Ethically Complicated Patients: Moving Clinical Ethics Beyond Informed Consent Forms to Full Systemic Integration at a Tertiary Care Hospital

Disease Complexity	Alan E Zuckerman	Opportunities to Use the New Sub-Specialty of Clinical Informatics to Improve the Management of Complexity in Healthcare
	Kath Skinner	Responding to the complexity of a nested system of new paradigms to support the emergence of a new palliative care service in New South Wales (Australia) providing last-days-of-life home support primary healthcare
	Gaetano R. Lotrecchiano	Measuring Culture Change Preference in an Academic Medicinal Center Steering Team for Education
	Moderator: Paul Plesk	
Disease Complexity	Hakima Amri	Parsimony Phylogenetics: A Systems Biology Solution to Cancer Data Heterogeneity and Complexity
	Mary R. Talen	Tackling Complexity Care: An Empanelment Process using EHR variables for identifying and Medical, System, and Patient Engagement Complexity
	Talgat Nurkas	Role of TGF- $\beta$ induced Epithelial Mesenchymal Transition (EMT) and Metabolism in Pancreatic Ductal Adenocarcinoma
	Ozge Karanfil	Implications of widespread mammography screening
Moderator: Markus Thygeson		
Clinical Care	Mooney SJ	Stigma and the Etiology of Depression among the Obese: Insights from an Agent-Based Social Network Model
	Sister Grace Miriam (Rachel) Usala	Hyponatremia is Associated with Increased Osteoporosis and Bone Fractures in a Large Health System Population
	Jenna Nicole Ray	Disentangling Irritable Bowel Syndrome Interventions: Social Care, Breath Training, and Mindfulness
	Carmel Martin	Assessing Primary Care: Patterns in Individuals with High Risk Health Journeys
Moderator: Martin Konitzer		
Health System Development	Sreenivas R	Long-Tails, Power-laws and Complexity: What it means to our healthcare system?
	Samuel McAleese	Understanding System Variation to Improve Sepsis Care at Medstar Health
	Syed Azizur Rahman	Unqualified Health Care Providers in Rural Health Care System in Bangladesh: Quality of services and effects on Maternal and Child Health
	Mallikarjun Shankar	Complementing RCTs: In Silico Analytics, Modeling, and Simulation of Healthcare
	Rutger Ijntema	Success factors within business models for primary health care businesses physical therapy in the Netherlands; Systematic review with critical interpretative synthesis.
Moderator: Holly Lanham		

## Day 2

7:30-8:00 Breakfast

Session 3 (8:00-10:45noon)

**Title: Ethics and Education – the Challenges for Systems-based Medicine**

Session Chair: Beverley Ellis

8:00-8:30	Keynote	Kevin T. FitzGerald	Ethical Complexities Issues in Systems Medicine: What Care and for Whom?
8:30-9:00	Keynote	Fred Hafferty	Reconceptualizing Medical Education as a Complex Adaptive Environment: An Institutional Imperative
9:00-9:15	12 min presentations	Stewart Mennin	Uncertainty and Praxis in Medical Education
9:15-9:30		Stewart Mennin	Integration in Health Professions Education as Emergence
9:30-9:45		Erick Valdes	Complexity and Bioethics in the 21st Century
9:45-10:00		Damjana Rozman	Systems medicine of multifactorial disorders: the approaches of CASyM, the Coordinated Actions Systems Medicine in Europe
10:00-10:15		Frances Griffiths	Systematic literature reviews – beyond Cochrane to complexity
10:15-10:45		Panel	<b>Moderator:</b> Rene Crichlow

10:45-11:15 Morning Tea

Session 4 (11:45-12:30)

**Title: Change in an Adaptive Organization**

Session Chair: Aviad Haramati

11:15-11:30	12 min presentations	Shimon Waldfogel	Public Reporting: Potential for healing the US healthcare system
11:30-11:45		Russell S. Gonnering	Agent---Based Modeling of Organizational Performance
11:45-12:00		Dr. Sergio Camorlinga	Leading the Healthcare Organization as a Complex Adaptive System
12:00-12:15		Beverley Ellis	The value of systems and complexity thinking to enable change in adaptive healthcare organisations, supported by informatics
12:15-12:30		Jacqueline Morse	Addressing avoidable ED utilization and rehospitalizations as symptoms of complexity through a quality improvement methodology

12:30-1:30 Lunch and Roundtables

Session 4 (1:30-4:00pm)

**Title: Change in an Adaptive Organization**

Session Chair: Paul Plesk

1:30-1:45	12 min presentations	Carmel Martin	Access to Primary Care: a Complex Adaptive Systems perspective
1:45-2:00		Yaneer Bar-Yam	Complex Systems Science and Healthcare Improvement
2:00-2:15		Joachim Sturmberg	"If the facts don't fit the theory, change the facts." Implications for Health System Reform

2:15-2:30		Lucy Leykum	Manifestations and implications of uncertainty for improving healthcare systems: an analysis of observational and interventional studies grounded in complexity science
2:30-3:00	Keynote	Curt Lindberg & Elisabeth Ciemins	Implementing change
3:00-4:00	Panel	<b>Moderator:</b>	Stewart Mennin
4:00-4:15	Wrap up		