

Module 1: Health Care Practice

1.1 Evidence-based Medicine for Non-Clinicians

This course will take participants to the „grass-roots“ of evidence-based medicine (EBM), explaining its origin as a clinical concept driven by core principles of medical ethics, surveying the attitudes and methodological competencies required for the practice of EBM, and widening the perspective by developing the concept of evidence-based health care. Key concepts to be taught include *I.* pivotal situations in the physician-patient encounter, *II.* the methodological five Steps of EBM, *III.* the critical appraisal of a clinical trial evaluating therapeutic modality, *IV.* systematic reviews and meta-analyses, *V.* needs assessment, priority setting and coverage decisions, and *VI.* the role of health technology assessments.

Target audience: Non-clinicians with an interest in EBM.

Format: 45 minutes of lecture, two hours of small-group teaching session, and 45 minutes of lecture.

The teachers: *Dr. Dagmar Lüthmann* is a lecturer in social medicine and the coordinator of all teaching at the University of Lübeck's Institute for Social Medicine. *Dr. Dr. Heiner Raspe* is Professor of Social Medicine and the Director of the University of Lübeck's Institute for Social Medicine, a national research centre for EBM, health technology assessment, clinical epidemiology, and rehabilitation services. He is also an elected member of the German parliament's *Enquete Commission on Ethical and Legal Aspects of Modern Medicine*.

1.2 Focused Operations Management in Health Care Organizations

How can a hospital successfully reduce response time in the Emergency Department by 40 percent and at the same time increase its clinical quality without using additional resources? This short course introduces new management tools that can help healthcare organizations to do much more with the same resources – in terms of throughput, response time and quality. The course provides a systems view to address issues of performance measurement, quality and value creation. It demonstrates how simple tools – such as the satisficer approach, the Seven Focusing Steps of the Theory of Constraints, working in small batches, strategic gating, the Complete Kit concept and

Pareto analysis – can be applied to yield fast improvements.

Target audience: Practitioners and managers in health-care organizations as well as interested researchers.

Format: Four hours of lectures and discussion.

The teacher: *Joseph S. Pliskin PhD* is the Sidney Liswood Professor of Health Care Management and Chair of the Department of Health Systems Management at Ben-Gurion University of the Negev, Israel. In addition, he is an Adjunct Professor at the Department of Health Policy and Management at the Harvard School of Public Health. He has co-authored two influential textbooks on which his teaching draws: “Decision Making in Health and Medicine: Integrating Evidence and Values” (2001) and “Focused Operations Management for Health Services Organizations” (2006).

Module 2: Valuation Methods

2.1 Measuring Patient Preferences to Value New Medical Technologies

This workshop develops a sound understanding of the benefits of using theory-driven conjoint analysis to study patient preferences. It provides practical experience of using this method – designing, piloting, conducting and analyzing a simple conjoint analysis – and explains the underlying economic principles as well as the value to various stakeholders of measuring patient preferences for health care interventions and new medical technologies.

Target audience: Researchers in medicine and economics as well as decision makers in government, health care management and regulatory organizations.

Format: A mixture of lecture and interactive group work for a total of two hours.

The teacher: *John F.P. Bridges PhD*, an assistant professor at the Johns Hopkins Bloomberg School of Public Health in Baltimore (USA), was born in Australia, received his PhD in health economics from Professor Michael Grossman at the City University of New York and served as head of international health economics and outcomes research at the University of Heidelberg. He won the 2006 ISPOR Bernie O'Brien New Investigator award and sits on the editorial boards of *PharmacoEconomics*, *Applied Health Economics*, and *Health Policy*.

2.2 The Organization of Health Technology Assessment in Germany

This workshop will give an overview of the practice of health technology assessment (HTA), explain the significance of HTA for policy advice, describe the structure and organization of HTA in Germany, with particular emphasis on the relationship to HTA international.

Target audience: Anybody interested in health technology assessment and German health policy.

Format: 1 hour of presentation and interactive discussion.

The teacher: *Dr. Alric Rüther* is head of the Deutsche Agentur für Health Technology Assessment (DAHTA) at the *Deutsches Institut für Medizinische Dokumentation and Information (DIMDI)* in Köln.

2.3 Defining Value through Outcomes Research

This course provides an introduction to various types of outcomes research studies that can be used to define the value of pharmacotherapy at different stages of drug development. The syllabus includes *I.* Overview of value and why it is important, *II.* Description of different sources of data and how they are used, and *III.* Interactive examples of case studies. Participants will learn how to apply cost and outcomes to define product value, understand the pros and cons of different types of data, and analyse how they influence drug choice.

Target audience: Health care decision makers.

Format: One hour presentation, 90 minutes didactic, 30 minutes interactive discussion.

The teacher: *Diana I. Brixner R.Ph. PhD* is Associate Professor and Chair of the Department of Pharmacotherapy at the University of Utah College of Pharmacy in Salt Lake City. She is also Executive Director of the Pharmacotherapy Outcomes Research Center at the University of Utah Health Sciences Center. She previously served as Vice President of Health Care Management for Novartis Pharmaceuticals and in various other positions for pharmaceutical companies in the US. She has been elected the 2007-2008 President of the International Society of Pharmacoeconomics and Outcomes Research (ISPOR) and sits on the editorial board of the *Journal of Managed Care Pharmacy*.

Module 3: *Information Technology*

3.1 eHealth – New Ways of Providing Services and Learning

This workshop offers an introduction to eHealth applications for medical services (including electronic records, prescription, diagnosis and treatment tools) and for health care administration (including electronic cards, prescription and reimbursement) as well as to the use of telemedicine and patient records as tools for professional development and performance management in health care organizations.

Target audience: Managers, practitioners, policy makers, and researchers.

Format: 45 minutes of presentation, two hours of small group discussion, 45 minutes of general discussion.

The teacher: *Mila García-Barbero MD PhD* is Professor of Medicine at the University of Alicante's School of Medicine and Director of the Department of Medical Education in the Department of Biochemistry and Physiology at the Medical School of the University of Valladolid. She also serves as Head of the WHO European Office for Integrated Health Care in Barcelona.

3.2 Using Computer Simulations of Biological Processes in Medicine – A Hands-on Introduction

This course introduces mathematical models for biological processes that can be analyzed through computer simulations. The syllabus includes *I.* Introduction to the scope of modeling, model classification, and potential applications, *II.* Steps in modeling, *III.* Deterministic models, *IV.* Discrete models and medical applications of chaos theory, *V.* Modeling structures, and *VI.* Introduction to advanced models.

Target audience: Primarily young researchers.

Format: Two sessions of 105 minutes each.

The teacher: *George I. Mihalas* is Professor of Medicine and Biostatistics in the Department of Medical Informatics and Biophysics at Victor Babes University of Medicine and Pharmacy in Timisoara, Romania, and serves as President of the European Federation for Medical Informatics (EFMI).

Module 4: *Decision Theory*

4.1 Introduction to Decision-analytic Modeling for Health Economic Evaluation and Clinical Decision Making

An introduction to decision-analytic modeling for medical decision making, economic evaluation, and health technology assessment: *I.* Decision making under uncertainty, *II.* Model types (decision trees, Markov models), *III.*

Weighting clinical benefits and risks related to mortality and quality of life, and *IV.* Calculating cost-effectiveness ratios. Applied examples from government HTA reports will be presented to demonstrate strengths and limitations of decision-analytic modeling.

Target audience: Members of academia, public agencies and private industry involved in decisions, policy making, management and regulations in health care.

Format: 3 hours of lecture, exercises, group discussion.

The teacher: *Uwe Siebert MD MPH MSc ScD* is Professor of Public Health and Chair of the Department of Public Health, Medical Decision Making and Health Technology Assessment at the University for Health Sciences, Medical Informatics and Technology (UMIT) in Hall (Innsbruck) and Associate Professor for Radiology at the Harvard Medical School in Boston (USA).

4.2 Advanced Topics in Decision Analysis: Markov Models, Monte Carlo, and Discrete Events

The focus of this course is on advanced concepts in decision modeling that allow for the development of more detailed models, and make them clinically more realistic. The course will cover advanced Markov models and Monte Carlo techniques for highly detailed clinical situations. The use of Monte Carlo in sensitivity analysis will be described, and a brief introduction of discrete event simulation and its relationship to other decision analytic models will be presented.

Target audience: Managers, practitioners, policy makers, and researchers. Participants should have taken the introductory course or be familiar with decision trees.

Format: The course will comprise five lecture with a total duration of three and a half hours: *I.* Advanced Markov Models, *II.* Use of Monte-Carlo micro simulation to increase the detail in state transition models, and eliminate the Markovian lack of memory assumption, *III.* Use of

Monte Carlo methods for conducting advanced sensitivity analysis, *IV.* Introduction to discrete event simulation, and *V.* Comparison of methods.

The teacher: *Mark S. Roberts MD MPP* is Associate Professor of Medicine, Health Policy and Management and Industrial Engineering as well as Chief of Decision Sciences and Clinical Systems Modeling at the University of Pittsburgh School of Medicine (USA).

Module 5: *Genomics-based Medicine*

5.1 Best Practice of Individualized Healthcare

The Human Genome Project and related technologies have opened the door to new approaches in biomedicine with a profound impact on the delivery of clinical care. New devices will allow to locate genetic diagnosis closer to the point-of-care. Developments in pharmacogenetics offer the possibility of fine-tuning drug therapy in line with patients' genetic profile. Functional studies will permit a much more precise classification of disease. Population-oriented studies are already providing new insights into the molecular causes of many diseases. This course describes *current* best practices in the context of information and genomic based medicine. After a review of the Human Genome Project, the key concepts of molecular and individualised healthcare will be introduced. The main opportunities in diagnosis, therapy and prevention will be analysed. Current gaps and limitations to individualised healthcare and initiatives that are being launched to overcome these barriers will be explained.

Target audience: Health care and policy practitioners, delegates from the biomedical industry, and researchers.

Format: Three sessions with lectures on *I.* the human genome project and related technologies, *II.* current best practice of individualized healthcare, and *III.* limitations and future developments. This course lasts all day.

The teacher: *Dr. Fernando Martin-Sanchez* served five years as Chief of Information Systems of the National Institute of Health "Carlos III" of Spain before his promotion to Head of the Medical Bioinformatics Department in 1998, where he currently leads a multidisciplinary research team. He is a member of the Board of the Spanish Health Informatics Society and its representative at the International Medical Informatics Association (IMIA).