

Warwick Business School Behavioural Science Group

Summer School on Medical and Ethical Decision Making



7 July-10 July 2015, Venice

Programme



Behavioural Science Group 3rd Summer School
Medical and Ethical Decision-Making
7 July – 10 July 2015, Venice

Tuesday 7 July

9:30 – 10:00 Registration and coffee

10:00 – 11:15 Gerd Gigerenzer: “70-80% of doctors do not understand health statistics”:
What's the solution'?

11:15– 11:45 Coffee

11:45– 13:00 Edi Karni: A Theory of Medical Decision Making under Uncertainty

13:00 – 14:30 Lunch - Trattoria Storica, Salizada Seriman, 4858, 30121 Venezia, Italy

14:30 – 15:45 Ido Erev: Rare events: The example of medical insurance and safe medical
behaviour

15:45 – 16:15 Coffee

16:15 – 17:30 Ivo Vlaey: Recent developments in behaviour change and decision theory
(nudge theory)

Wednesday 8 July

10:00 – 11:15 Moshe Leshno: Stochastic dominance and clinical guidelines

11:15 – 11:45 Coffee

11:45 – 13:00 Uzi Segal: Randomization and fairness: Axioms and objections

13:00 – 14:30 Lunch - Trattoria Storica, Salizada Seriman, 4858, 30121 Venezia, Italy

14:30 – 15:45 Gerd Gigerenzer: How current health care systems encourage overtreatment
of patients and deception

15:45 – 16:15 Coffee

16:15 – 17:30 Daniel Read: Why are people “hyperbolic discounters”?

Thursday 9 July

10:00 – 11:15 John Fox: Stacks and ladders: A common-ground theory of (medical) decision-making I

11:15 – 11:45 Coffee

11:45 – 13:00 Edi Karni: Helping Patients and Physicians Reach Individualized Medical Decisions: Theory and Application to Prenatal Diagnostic Testing

13:00 – 14:30 Lunch - Trattoria Storica, Salizada Seriman, 4858, 30121 Venezia, Italy

14:30 – 15:45 Ido Erev: On the decisions to explore by patients and doctors

15:45 – 16:15 Coffee

16:15 – 17:30 John Fox: Stacks and ladders: A common-ground theory of (medical) decision-making II

19:00 – 21:00 Summer School dinner - L'Ombra del Leone, Ca' Giustinian | San Marco 1364/a, 30124 Venice

Friday 10 July

10:00 – 11:15 Uzi Segal: How to randomize: Biased lotteries and fairness

11:15 – 11:45 Coffee

11:45 – 13:00 Gerard Hodgkinson: Evidence-based decision making

13:00 – 14:30 Lunch - Trattoria Storica, Salizada Seriman, 4858, 30121 Venezia, Italy

14:30 – 15:15 Tigran Melkonyan and Zvi Safra: Groups presentations

15:15 – 15:45 Coffee

15:45 – 17:00 Moshe Leshno: Models in the Development of Clinical Practice Guidelines

Delegate List
Behavioural Science Group 3rd Summer School
Medical and Ethical Decision Making
7 July – 10 July 2015

Name	Institutional Affiliation	Email
NurulAin Ahayalimudin	University of Warwick, WMS	N.A.Ahayalimudin@warwick.ac.uk
Mary Anderson	Ogilvy CommonHealth	mary.anderson@ogilvy.com
Nebout Antoine	INRA	antoine.nebout@ivry.inra.fr
Ashikin Atan	University of Edinburgh	s1473165@ed.ac.uk
David Bonnyay	Ogilvy CommonHealth	david.bonnyay@ogilvy.com
Louise Corcoran	NHS West Midlands Deanery	louisec1990@hotmail.com
Rachael Corry	Ogilvy Healthworld	rachael.corry@ogilvy.com
Maarten Cuypers	Tilburg University	m.cuypers@uvt.nl
Ohad Dan	Hebrew University of Jerusalem	ohad.dan@gmail.com
David Davenport-Firth	Ogilvy Healthworld	david.davenport-firth@ogilvy.com
Nick Gibbs	Ogilvy Healthworld	nick.gibbs@ogilvy.com
Sean Gill	University of Stirling	gillse@tcd.ie
Amy Grove	University of Warwick, WBS & WMS	A.L.Grove@warwick.ac.uk
Alastair Irvine	HERU, University of Aberdeen	r01adi14@abdn.ac.uk
Omar Jarral	Imperial College London	o.jarral@imperial.ac.uk
Juri Katchanov	Dept of Infectious Diseases, AVK, Berlin	juri.katchanov@charite.de
Julia Kolodko	University of Warwick, WBS	J.H.Kolodko@warwick.ac.uk
Christopher Kops	Goethe University Frankfurt	kopschristopher@gmail.com

Wei Ma	University of Pretoria	maweicityu@gmail.com
Sinong Ma	University of Warwick, WBS	Sinong.Ma@warwick.ac.uk
Connie Nilsen	UiT The Arctic University of Norway	connie.v.nilsen@uit.no
Karen Nokes	University of Warwick, WBS	phd13kn@mail.wbs.ac.uk
Claire Oatway	University of Warwick, WBS	Claire.oatway@blueyonder.co.uk
Eze Okubuiro	University of Warwick	e.o.okubuiro@warwick.ac.uk
Nadine Oweis	Ogilvy Healthworld	nadine.oweis@ogilvy.com
Kris Patel	University of Warwick, WBS	Krishane.Patel@warwick.ac.uk
Emma Phelps	University of Warwick, WMS	E.E.Phelps@warwick.ac.uk
Ori Plonsky	Technion - Israel Institute of Technology	plonsky@campus.technion.ac.il
Sven Resnjanskij	University of Konstanz	sven.resnjanskij@uni-konstanz.de
Kelly Schmidtke	University of Warwick, WBS	Kelly.Schmidtke@wbs.ac.uk
Edwina Sinclair	Ogilvy Healthworld	edwina.sinclair@ogilvy.com
Umar Taj	University of Warwick, WBS	U.Taj@warwick.ac.uk
Lukasz Tanajewski	University of Nottingham	lukasz.tanajewski@nottingham.ac.uk
Philip Voyias	University of Warwick, WMS	P.D.Voyias@warwick.ac.uk
Boris Wiesenfarth	Heidelberg University	boris.wiesenfarth@awi.uni-heidelberg.de
Tracey Wood	Ogilvy Healthworld	tracey.wood@ogilvy.com

Tuesday 7 July 2015

10:00 – 11:15

Gerd Gigerenzer: "70-80% of doctors do not understand health statistics
"What's the solution'?"

This talk reviews methods that help physicians make sense of health statistics. In the CME workshops that I have led, roughly 1,000 physicians to date quickly learned how to understand risks and their formats, such as absolute risks versus relative risks, mortality rates versus survival rates, and natural frequencies versus conditional probabilities. However, medical departments remain surprisingly reluctant to teach medical students statistical thinking.

Tuesday 7 July 2015

11:45 -13:00

Edi Karni: A Theory of Medical Decision Making under Uncertainty

Present an axiomatic model of medical decision making and discusses its potential applications. The medical decision problems envisioned concern the choice of a medical treatment following a diagnosis in situations in which data allow construction of an empirical distribution over the potential outcomes associated with the alternative treatments. The theory aims at aiding physicians recommend treatments in a coherent manner.

Tuesday 7 July 2015

14:30 -15:45

Ido Erev: Rare events: The example of medical insurance and safe medical behaviour

Basic studies of choice behavior reveal large differences between decisions that are made based on a description of the incentive structure, and decisions that are made based on past experience. People tend to overweight rare events when they make a single choice from description, and experience leads to the opposite bias. Following experience people behave as if they believe that "it wont happen to me." The current class reviews this experience-description gap, and its implication to insurance and the enforcement of safe medical behavior.

Tuesday 7 July 2015

16:15 -17:30

Ivo Vlaev: Recent developments in behaviour change and decision theory (nudge theory)

This lecture aims to introduce the key assumptions in economics, as well as models and data from behavioural economics which is an emerging academic discipline that makes more realistic assumptions about the psychology of economic agents. The focus, however, is on the impact on choice, public/patient and provider behaviour, behaviour change and choice architecture. The ability to influence behaviour is central to many of the key health policy challenges.

Wednesday 8 July 2015

10:00 -11:15

Moshe Leshno: Stochastic dominance and clinical guidelines

Stochastic Dominance (SD) is a method for narrowing a set of options by identifying and excluding inefficient ones, based on only a general observation regarding preferences, thus allowing greater degree of generalizability. In essence, an option found to be dominated by SD can be said to be undesirable by all “rational” decision makers.

Clinical guidelines are recommendations aimed to improve medical practice in order to lead to a better health results, mainly on the basis of the benefit and harm of the intervention. Given the idea behind clinical guidelines, one can assume that interventions that are recommended would lead to better outcomes than ones that are not.

The aim of this presentation is twofold (1) to present the paradigm of stochastic dominance and almost stochastic dominance and (2) to demonstrate how to implement stochastic dominance concept to assess recommendations in clinical guidelines. Few medical cases will be discussed and analyzed.

Wednesday 8 July 2015

11:45 -13:00

Uzi Segal: Randomization and fairness: Axioms and objections

When in doubt which of two or more individuals should get a certain treat (or suffer a loss) of an indivisible good, flipping a coin seems to be the most natural mechanism to use. In this lecture we will discuss two possible axiomatizations of this idea, and will see why the whole idea of randomization may lead to dynamic inconsistency.

Wednesday 8 July 2015

14:30 -15:45

Gerd Gigerenzer: How current health care systems encourage overtreatment of patients and deception

While the first talk focuses on the individual physician, the second deals with the medical system. It focuses on defensive decision making due to physicians’ fear of malpractice suits and the conflicts of interests inherent in medical systems. It makes clear that the decisions physicians make cannot be explained by standard individual decision theory but are a function of the incentives and legal fears physicians have, together with an unhealthy portion of blind trust that many people exhibit when they see a white coat.

Wednesday 8 July 2015

16:15 -17:30

Daniel Read: Why are people “hyperbolic discounters”?

People are impulsive, often choosing the more enticing amongst their options even when their more prudent self would prefer they do something else. For example, they want to eat less sugar, but fall off the wagon every time they pass a vending machine. They want to exercise, but today is not a good day to start. This talk will examine research that has been done on this phenomenon, with a focus on a specific explanation called “hyperbolic discounting” or “present bias”, the suggestion that people can be characterized by a discount rate that displays decreasing impatience as a function of delay.

I will discuss research showing in what way people are impulsive, and how present bias is used to explain this impulsivity. I will then discuss a wide range of contrarian research, showing that present bias is by no means a universal phenomenon, and use some new data to identify boundary conditions of the preference pattern. I will also consider how to talk about hyperbolic discounting behaviour without talking about hyperbolic discounting functions.

Thursday 9 July 2015

10:00 -11:15

John Fox: Stacks and ladders: A common-ground theory of (medical) decision-making I

Decision-making is studied in many different fields, from medicine and economics to psychology and the social and management sciences, with key contributions from mathematics, logic and statistics, computer science and artificial intelligence, and increasingly game theory and neuroscience. I have argued that this diversity of thinking (about what decision-making consists of and methods for studying it) has resulted in “silo-isation” of the decision research communities, with the effect of hiding opportunities for understanding the common ground between theories of medical decision-making, and decision making generally.

Scope of the talks

The many silos within and around decision science can be roughly grouped into three broad research programmes: the empirical programme that is concerned with human decision-making in the lab and the field (behavioural theory); work on formal foundations and axioms of rational decision-making (prescriptive theory), and development of techniques and technologies for supporting and improving patient care (decision systems engineering). These perspectives all bring important insights for understanding decision-making, yet they also help to sustain the fragmentation of the field.

In these lectures I will introduce a way of thinking about medical decision-making that seeks to capture some of the common ground of the three research programmes, and discuss some of the practical and clinical benefits this brings.

The CREDO stack



CREDO is a framework for understanding decision-making based on cognitive, formal and computational principles, and a “stack” of software for designing decision-making and AI systems. It has evolved through a long-term programme of empirical studies of clinical practice, attempts to unify theoretical concepts from different branches of decision science, and design of decision technologies based on the unified framework. CREDO has been used to design and deploy a wide range of clinical applications, from detection and diagnosis to treatment and long-term management in many medical specialties and clinical settings. This lecture will give an overview of the main concepts and results that underpin CREDO, and in particular a “common ground” or canonical theory of decision-making under uncertainty, and a technology for developing clinical decision support systems based on the theory. The talk will include demonstrations of decision support systems in oncology and endocrinology (internet access permitting).

Thursday 9 July 2015

11:45 -13:00

Edi Karni: Helping Patients and Physicians Reach Individualized Medical Decisions: Theory and Application to Prenatal Diagnostic Testing

Outline a procedure designed to aid physicians and patients in the process of making medical decisions, and illustrates its implementation to aid pregnant women, who decided to undergo prenatal diagnostic test choose a physician to administer it. The procedure is based on a medical decision making model that accommodates the possibility that the decision maker's risk attitudes may vary with her state of health and incorporates other costs, such as pain and inconvenience, associated with alternative treatments. The medical decision problem was chosen for its relative simplicity and the transparency it affords.

Thursday 9 July 2015

14:30 -15:45

Ido Erev: On the decisions to explore by patients and doctors

The decision whether to explore new alternatives or to choose from familiar ones is implicit in many of activities. How is this decision made? When will deviation from optimal exploration be observed? The current class reviews research that examines exploration decisions, and discuss some of the implications of this research to medical practices, and mechanism design. The result reveal the co-existence of insufficient and too much exploration. Insufficient exploration is likely when the common outcome from exploration effort is disappointing, the opposite bias is likely when most exploration effort are reinforcing.

Thursday 9 July 2015

16:15 -17:30



John Fox: Stacks and ladders: A common-ground theory of (medical) decision-making II

2: The knowledge ladder

However well human brains, mathematical theories or computer software can effectively bring about rational decision-making the concepts that these paradigms offer are only a small part of the story. A medical student takes 5-7 years to acquire a body of medical knowledge about anatomy, physiology, biochemistry, genetics (etc etc) and a repertoire of expertise in clinical reasoning, problem-solving, decision-making, planning and strategies for efficient learning. Without a substantial (actually prodigious!) body of knowledge and the expertise to use it appropriately and efficiently theories of reasoning, decision-making, problem-solving and planning are of limited value in understanding medical decision-making.

Decision science has tended to ignore knowledge, regarding it as mere *content*, of little theoretical importance. However, progress in biomedical informatics, AI and computer science is showing that knowledge is far more interesting than just a large collection of facts, numbers or other kinds

of content. We now know that medical (all) knowledge has a systematic structure, with many layers of increasing complexity that define the meaning of concepts and determine the power of decision-making heuristics and versatility of expert strategies.

This talk will describe the *knowledge ladder*, an attempt to capture the structure of medical knowledge from concepts and facts to the kinds of decision-making and care planning strategies that medical students acquire and hone throughout their clinical careers. A repository of 50+ examples of the kind of structured expertise that clinicians may acquire and use in their practice can be found at <http://www.openclinical.net>. There will be a brief tour of the web site during the workshop but participants can look at the repository themselves and run some demo examples at <http://www.openclinical.net/demos.html>.

Friday 10 July 2015

10:00 -11:15

Uzi Segal: How to randomize: Biased lotteries and fairness

In this lecture we'll see conditions under which society may wish to randomize between several options even though one of them is better than all others. We'll discuss a simple rule that determines the probability of each individual to be picked.

Friday 10 July 2015

11:45 -13:00



Gerard Hodgkinson: Evidence-based decision making: A critical realist design science agenda for social and health care reform

Evidence-based decision making (EBDM) has risen to the fore across many of the professions, not least the health and caring professions, as an espoused logic for improving the quality of decision processes and attendant outcomes, epitomized in medicine by the establishment of the UK's National Institute of Clinical Excellence (NICE). As stated on the NICE website:

“Since 1999, we have provided the NHS, and those who rely on it for their care, with an increasing range of advice on effective, good value healthcare, and have gained a reputation for rigour, independence and objectivity. In April 2013 we gained new responsibilities for providing guidance for those working in social care.”

Adopting the well-established distinctions between descriptive, normative, and prescriptive accounts of decision making, in this talk I will argue that the failure to pay closer attention to these important distinctions has resulted in a series of unintended consequences for policy makers, social and healthcare professionals, and all stakeholders with a vested interest in enhancing medical and social care (i.e. everyone!), culminating in an illusion of rationality, a multilayered façade that masks fundamental differences of interpretation, purpose, and power among the diversity of stakeholders situated variously throughout the health and social care system. Efforts to improve the quality of social and healthcare provision predicated on cold cognition conceptions of decision making will, at best, only ever partially succeed, because the reforms ultimately required to the system necessitate a deeper understanding of and engagement with the emotional roots of the cognitive and behavioural challenges at hand.

In liberal democratic societies, rather than seeking merely to refine stakeholders' (mis)understanding of risks in statistical terms, designers of decision processes need also to address the emotional and political needs and wants of stakeholders situated variously within the social and healthcare system. An enhanced understanding the emotional roots of decision making, like increased statistical literacy, will enable the development of a better-informed system. Tools and processes for aiding decision making, from the highest levels of policy formulation to decisions affecting immediate patient/client care, need to be revisited accordingly.

The problems thus highlighted present a rich opportunity for social and behavioural scientists across a wide spectrum of disciplines (not least economics, political science, psychology, and sociology) to collaborate meaningfully with the full range of stakeholders in the pursuit of a far-reaching research agenda that seeks to develop new knowledge, both fundamental and applied, to inform the design and evaluation of practices that are better fit for purpose than those presently available.

Friday 10 July 2015

15:45 -17:00

Moshe Leshno: Models in the Development of Clinical Practice Guidelines

Clinical practice guidelines should be based on the best scientific evidence derived from systematic reviews of primary research. However, these studies often do not provide evidence how to evaluate the tradeoffs between benefits and harms and how to make rational decisions (recommendations). We'll present areas where models can bridge the gaps between published evidence and exploring a complete array of alternative intervention strategies; assessing benefits and harms over a specific time horizon (e.g. lifetime horizon). A modeling study is most useful when strong primary evidence is available to inform the model but sometime, critical gaps remain between the evidence and the questions that the guideline group must address. In addition, will discuss the drawbacks of mathematical modeling in the evaluation of alternative intervention strategies and discuss and demonstrate few medical examples. The talk is based on a recent published paper.

Map & Locations

Event Location

The University of Warwick in Venice, Palazzo Pesaro Papafava, Calle de la Rachetta, Cannaregio 3764, 30121 Venezia, Italy / Italia

Speakers Hotel

Hotel Giorgione, Calle Larga dei Proverbi, 4587, 30121 Cannareggio, Venezia VE, Italy

Lunch each day 13:00 – 14:30hrs

Trattoria Storica, Salizada Seriman, 4858, 30121 Venezia, Italy

Monday 6th July Dinner (speakers)

Campo dei Gesuiti (Ogio), Cannareggio, 30121 Venezia, Italia

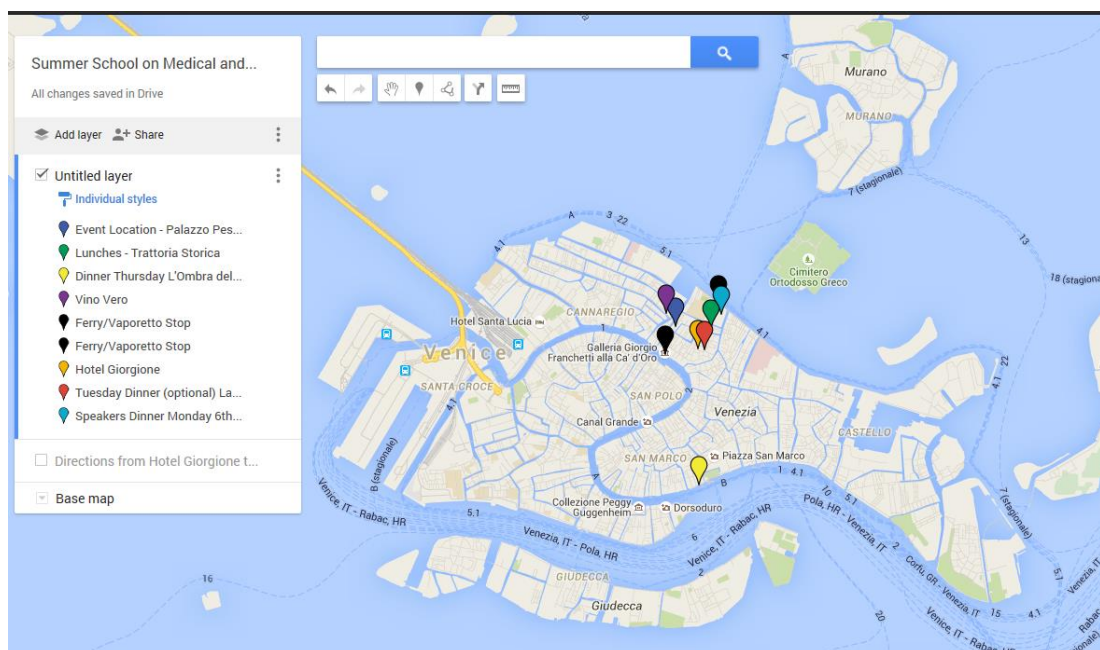
Tuesday 7th July Dinner (optional) 19:00hrs

La Vecia Cavana, Rio Terà SS. Apostoli, 4624, 30131 Venezia, Italia

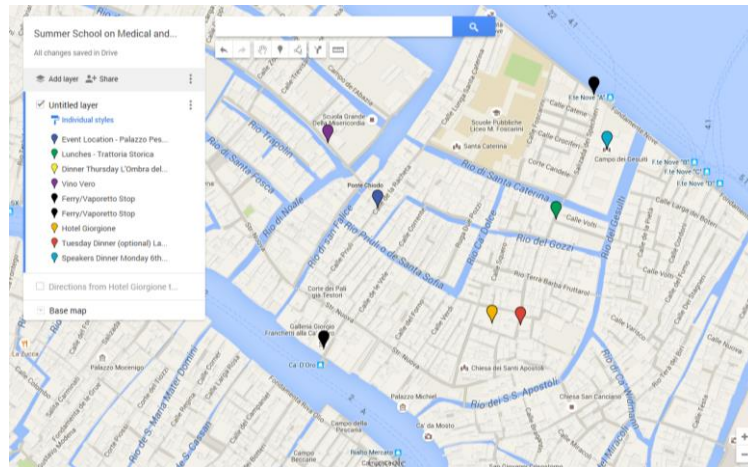
Thursday 9th July Summer School Dinner 19:00hrs

L'Ombra del Leone, Ca' Giustinian | San Marco 1364/a, 30124 Venice

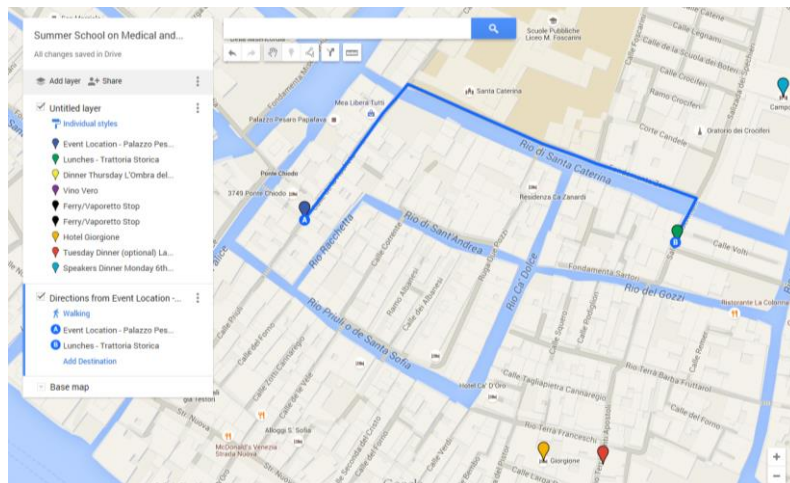
Venice with key locations



Main area of Summer School Locations



From Event Location (Palazzo Pesaro Papafava) to Lunch (Trattoria Storica)



From Speakers Hotel (Hotel Giorgione) to Event Location (Palazzo Pesaro Papafava)

