



**UNIVERSITY OF LEEDS**

Introduction to Economic Evaluation for Health  
Technology Assessment (HTA)  
Short course

June 24<sup>th</sup>-28<sup>th</sup> 2019

Lucerne, Switzerland

## **Who should attend?**

This is a four day course aimed at students, researchers and those working in industry or a policy context who have an interest in economic evaluation in health. No previous experience or knowledge in this area is assumed but the course does require quantitative skills and some experience using Excel.

## **Course faculty**

Dr David Meads is Associate Professor in Health Economics at the Academic Unit of Health Economics (AUHE), University of Leeds, UK. He has led many economic evaluations across different disease areas. He is a member of UK research funding panels and a National Institute for health and Care Excellence (NICE) Technology Appraisal Committee panel member.

Dr Peter Hall is an academic Medical Oncologist with a research interest in Health Economics and HTA in Cancer. He treats patients with breast cancer within the NHS at the Edinburgh Cancer Centre. The focus of his research is on the development of improved methods for efficient research design and cost-effectiveness analysis. He leads the Health Economics Group within the University of Edinburgh Clinical Trials Unit. He is a NICE Technology Appraisal Committee panel member.

Professor Chris Bojke is Professor of Health Economics and Director of the AUHE. He is an empirical health economist specialising in the analysis of observational datasets and their role in HTA.

Dr Bethany Shinkins is an Associate Professor and Lead of the Test Evaluation Group (TEG) at AUHE. She is a statistician and health economist, primarily focusing on evaluations of medical tests. She is Methodology Lead for the National Institute for Health Research Leeds In Vitro Diagnostics and Surgical MedTech Co-operatives.

## **Course content**

The course builds upon a well-established course established through a collaboration between the University of Leeds (UK), University of Auckland (New Zealand), University of Alberta (Canada) and University of Edinburgh (UK).

The course will introduce the concepts of HTA and economic evaluations in health covering the history of their development and rationale for their use. The use of HTA for policymaking and reimbursement will be covered and we will discuss alternative frameworks for economic evaluation.

We will focus on quality-adjusted life years (QALYs) and cost-utility analyses and cover both trial-based and model-based analyses. We will discuss the rationale for the use of decision-analytic modelling. The course will then introduce decision tree models and a particular case study in a diagnostic test context. We will then move onto introduce Markov models and spend more time exploring how these work and the information required to generate them. The outputs of economic evaluations will be discussed and we will cover the importance of uncertainty and how to assess this in sensitivity analyses.

There will be hands-on exercises through-out the course to enable students to try out modelling in Excel and to generate results. You will construct a probabilistic model in Excel considering the nature of the data distributions for model parameters and generate and interpret the results from this. After introducing the concept of uncertainty in economic evaluations, we will go on to consider the implications of this information for decision making, the cost of making the wrong decision and value of additional research.

As well as providing practical modelling experience, the course will introduce theories and technical terms used in HTA and there will be opportunities to discuss the advantages and disadvantages of the available frameworks. We will cover emerging fields in HTA such as the use of real-world evidence and key debates such as: should we include spillover effects in economic evaluations?; how much should we be willing to pay for health gain (and how should we determine this)?

Course practical exercise and solution Excel files are provided as is an exercise booklet.

### **Learning objectives**

- Understand the concepts and rationale of HTA and types of economic evaluation
- Understand when you would use a decision tree model and how they work
- Understand when you would use a Markov model, how they work and how to use them to inform decision making
- Appreciate the importance of uncertainty in economic evaluations and how this can be assessed
- Be able to generate a probabilistic Markov model in Excel and produce and interpret outputs
- Understand the concept of value of information and calculate this from probabilistic model results
- Learn about key developments and debates in HTA including precision medicine, real-world evidence and the willingness to pay threshold

## **Assessment**

There will be a series of exercises to be completed through-out the week during practical sessions and outside of class time.

The assessment will consist of a short test incorporating questions and calculations relating to economic evaluation and decision modelling.

## **Reading list**

Edlin R, McCabe C, Hulme C, Hall P, Wright J. Cost effectiveness modelling for health technology assessment. Heidelberg: Springer; 2015.

Gray AM, Clarke PM, Wolstenholme JL, Wordsworth S. Applied methods of cost-effectiveness analysis in healthcare. Oxford University Press; 2011.

Neumann PJ, Sanders GD, Russell LB, Siegel JE, Ganiats TG, editors. Cost-effectiveness in health and medicine. Oxford University Press; 2016 Oct 3.