

HEALTH ECONOMICS

for

HEALTH CARE PROFESSIONALS

POSTGRADUATE CERTIFICATE AND DIPLOMA PROGRAMMES BY DISTANCE LEARNING

Module 6

Advanced Topics in Economic Evaluation

Module Workbook

2010 - 2011 academic year

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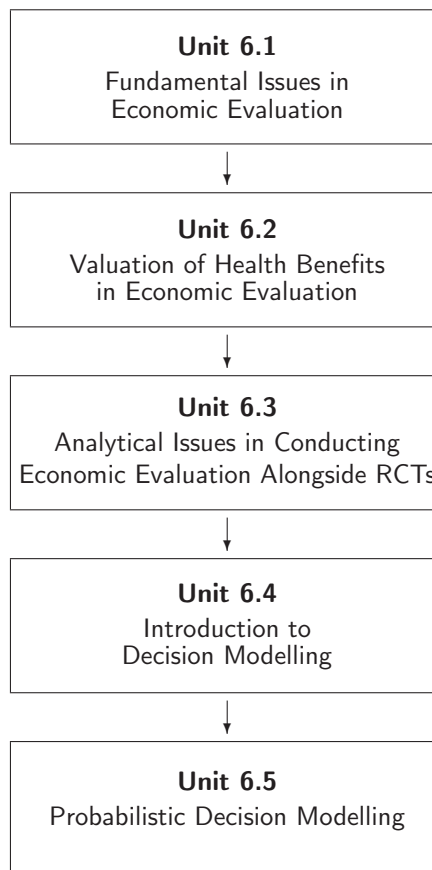
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STRUCTURE OF MODULE 6: *Advanced Topics in Economic Evaluation*



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Guide to Module 6

Learning aims and objectives

This is an **optional** module with the following learning aims and objectives:

Learning aims

To develop your understanding of the latest methods in economic evaluation, apply those methods and critique published economic evaluation studies.

Learning objectives

Upon successful completion of the module you should be able to:

- Explain how the economic concepts of efficiency provide the foundations for the economic evaluation of health care technologies.
- Be able to use appropriate decision rules in cost benefit and cost-effectiveness analysis, including an understanding of the importance of incremental ratios, extended dominance, net health benefits and alternative definitions of the cost-effectiveness threshold.

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- Use multi-attribute utility systems to measure quality-adjusted life-years (QALYs) in prospective evaluations.
- Explain the strengths and weaknesses of QALYs and describe alternative measures that have been developed.
- Explain and discuss the methodological problems associated with the economic analysis of patient level data carried out alongside randomised clinical trials (RCTs).
- Explain the alternative approaches that have been proposed to handle and describe the various forms of uncertainty when using patient-level data from RCTs.
- Explain the rationale for decision modelling in economic evaluation and describe its terminology.
- Be able to structure and analyse decision problems using a decision tree and Markov model.
- Identify model inputs which are subject to second order uncertainty and select appropriate probability distributions to characterise this uncertainty.
- Interpret the results of a Monte Carlo simulation including cost-effectiveness acceptability curves.

In addition to these, you should ensure you can meet the learning objectives outlined at the start of each unit.

Credits, timing and assessed work

The module is worth **20 credits** and should take approximately **200 hours** to complete over **12 weeks** of study, including the module assessment (see below). The following is a guide to the amount of time you might spend on each unit, although you are of course free to fit your study time to your own circumstances.

- w/c 21/3/2011 and 28/3/2011. Weeks 1 and 2. Familiarisation with Module 6, aims and objectives, introduction and Unit 6.1.
- w/c 4/4/2011 and 11/4/2011. Weeks 3 and 4. Unit 6.2.
- w/c 18/4/2011 and 25/4/2011. Weeks 5 and 6. Unit 6.3. Assessed work piece 1 (deadline: 18/4/2011).
- w/c 2/5/2011 and 9/5/2011. Weeks 7 and 8. Unit 6.4.
- Residential workshop 5 and 6/5/2011.
- w/c 16/5/2011, 23/5/2011 and 30/5/2011. Weeks 9 - 11. Unit 6.5. Assessed work piece 2 (deadline: 23/5/2011).
- w/c 6/6/2011 Week 12. Module assessment (8/6/2011 until 15/6/2011).
- Assessed work piece 1: Exercise 6.10.
- Assessed work piece 2: Question 1 from the 2008-9 exam paper.

Please note that programme staff are under no obligation to mark assessed work that is submitted late. This applies to all modules.

Module assessment

The assessment for this module is by a case study completed in week 12. The mark for this contributes 1/6 of your final grade.

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Also note that, in addition to the existing regulations concerning the award of the Diploma that are outlined in the programme handbook, it is required also that normally a candidate must score an average of 50% or more across the two Diploma options in order for a pass at Diploma level to be granted. No resits are allowed at Diploma level.

On-line learning: Yorkshire



The module is supported by the Yorkshire Academic Suite located at:

<https://vle.york.ac.uk>

You can access this using your username and password which will be separately supplied. Exercises which should be discussed on Yorkshire are flagged in the text with the computer icon.

Reading



The main teaching materials are contained within this workbook. References to books and papers are noted in this workbook by the book icon. These may be ordered from the University of York's library or you might find them in your local UK Libraries Plus library. Some of them can be found in the library's on-line journals pages (via the 'Information resources' link on Yorkshire). If you work in the NHS, your local professional librarian may prove helpful.

You are advised to obtain the compulsory reading cited in the workbook well in advance of each unit.

The main text from Module 3 will also be used in this module:

Methods for the Economic Evaluation of Health Care Programs. Michael F. Drummond, Mark J. Sculpher, George W. Torrance, Bernie J. O'Brien and Greg L. Stoddart. Oxford University Press 2005. 3rd edition. ISBN 0198529457.

In addition, the following book is supplied to you to accompany your study:

M.R. Gold, J.E. Siegel, L.B. Russell and M.C. Weinstein (eds). *Cost-Effectiveness in Health and Medicine*. Oxford University Press 1996. ISBN 0195108248.

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This reference is sometimes referred to in the text as the report of the 'US Panel'. There is a useful glossary on pages 392 - 411.

It is also recommended that you acquire the following book, as this is referred to frequently during the module:

Economic evaluation in health care. Merging theory with practice. M.F. Drummond and A. McGuire (eds). Oxford University Press 2001. ISBN 0192631764.

Essential reading is marked in the text with a * either in the main body of the text or in footnotes.

Module overview

In Module 3 you developed an understanding of the basic concepts of health care evaluation. In Module 6 you will build on those basic concepts to understand more advanced methods in economic evaluation. The aim is for you to be able to describe and use the latest methods which are being used in applied evaluations, and to be able to critique published economic evaluation studies using these methods.

The module is divided into five units as follows:

- Unit 6.1 introduces the *methodological foundations of economic evaluation*, presents *alternative decision rules* in cost benefit and cost-effectiveness analysis and discusses *alternative perspectives* and *appropriate reporting* of economic evaluations
- Unit 6.2 considers the *measurement of benefits* in economic evaluation. It describes how quality-adjusted life-years (QALYs) are typically measured in prospective economic evaluation studies using multi-attribute utility systems, the strengths and weaknesses of QALYs and alternative measures used in economic evaluation.
- Unit 6.3 presents some of the *statistical and methodological problems* associated with the *economic analysis of patient-level data collected alongside randomised clinical trials*. It describes the pros and cons of the proposed solutions, and it shows some applications of these techniques.
- Unit 6.4 examines the *principles of decision analytic modelling for economic evaluation*. It describes the rationale for modelling and the key terminology. It shows how *decision trees* and *Markov models* can be used to structure and evaluate decision problems.
- Unit 6.5 introduces some of the *problems with deterministic analysis* before considering how *uncertainty can be characterised* in decision models. Two examples of models which include *probabilistic analysis* are

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presented. The appropriate presentation and interpretation of the results of probabilistic analysis are discussed before introducing *Bayesian value of information analysis*.