Department of Health Management and Health Economics English

Faculty of Medicine

University of Oslo

##### Written Exam, Monday 6 June 09.00-13.00

HMM4301-Optimal allocation of health care resources and economic evaluation of health care technologies

(Economic Evaluation for short)

Exam resource: Calculator (only the calculator Citizen SR-270X is allowed or calculator provided by the Department)

The Written Exam consists of **3 pages** including this one

The examination grades will be posted on the board on **Monday 27 June** at the Department of Health Management and Health Economics, Forskningsveien 3A. The results will also be posted on Studentweb.

Remember to write down your candidate number so that you have it when the results are made available.

**FINAL EXAM HMM4301 SPRING 2011**

**1. (counts 25%)**

**Explain key differences between the following three pairs of concepts**

1. The generic health instruments EQ-5D versus 15D?
2. Quality adjusted life years (QALYs) versus Disability adjusted life years (DALYs)?
3. Cost-efficiency versus allocative efficiency?

**2. (counts 25%)**

**Priority implications of including production losses in economic evaluations**

A cancer screening programme involves that many people will be away from work whilst being screened. Discuss the arguments for and against including such production losses in the cost-effectiveness analyses

**3. (counts 25%)**

**‘Check list’ for economic evaluation studies**

When you read a paper that reports from an economic evaluation, which key questions would you ask for judging the goodness of the study?

**4. (counts 25%)**

**Question 4A – Choosing optimal strategy for prevention of influenza**

School closure has been proposed as a measure to prevent spread of infection during influenza pandemics. By keeping school children at home, infections are less spread. A major cost of such programs is lost production from parent’s work absenteeism when taking care of children who do not go to school. Health economists have developed an influenza model to evaluate 6 different school closure programs. The programs are mutually exclusive. The results of the modeling are presented in the table below. Society is willing to pay at maximum $72,000 for a QALY gained.

**Question 4A:** Which strategy should be chosen? Show the calculations you need to do to identify the best strategy.

|  |  |  |
| --- | --- | --- |
| **Strategy** | **QALY gain** | **Total costs ($)** |
| Do nothing | 0 | 435 125 000 |
| A | 507 | 433 912 000 |
| B | 579 | 434 175 000 |
| C | 404 | 434 804 000 |
| D | 624 | 435 481 000 |
| E | 664 | 440 043 000 |

**Question 4B/C – Choosing optimal treatment for patients with severe influenza**

Respiratory failure is a rare influenza complication. There are two treatment options for respiratory failure: (1) Ventilator therapy alone or (2) surgery with removal of diseased lung tissue (successful surgery) followed by ventilator therapy among those with unsuccessful surgery. You are uncertain whether to choose ventilator therapy alone or surgery followed by ventilator surgery when surgery is unsuccessful. Surgery entails two disadvantages: (i) there may be complications; (ii) the ventilator therapy is less effective if patients have had unsuccessful.

You have the following probabilities:

* If the patient has surgery, the probability that the diseased lung tissue can be removed is 50%.
* Ventilator therapy without surgery implies 20% probability of dying
* Ventilator therapy after unsuccessful surgery implies 50% probability of survival
* The risk of complications is 20% after successful surgery
* The probability of death is 5% after successful surgery without complications
* The probability of survival is 70% after successful surgery with complications
* If surgery is unsuccessful, there are no surgical complications.

You have two strategies:

1. Ventilator therapy alone without surgery
2. Surgery followed by ventilator therapy among those with unsuccessful surgery.

**Question 4B:** If you aim to maximize the probability of survival, what would be the optimal strategy? State explicitly any assumptions you make in solving this problem

**Question 4C:** The probability that surgery will be successful is uncertain. It can be higher or lower than 50%. At what probability of surgery success are the two strategies equally good? Show the analysis you undertake to arrive at the correct answer.