Department of Health Management and Health Economics English

Faculty of Medicine

University of Oslo

##### Written Exam, Friday 16 April 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 **2 pages** including this one

The examination grades will be posted on the board on **Friday May 7** 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.

Exam HMM-4301 – April 16th, 2010

**1. (counts 25%)**

**Equity in health**

What do we mean by ‘equity in health’? Discuss three major theories of distributive justice, and explain how they can be applied to health. Draw a general *health frontier*, and show which points on this frontier that are preferred by the three different theories.

**2. (counts 25%)**

**Explain the following concepts**

Health related social welfare function

Quality adjusted life years (QALYs)

Disability adjusted life years (DALYs)

Pareto-improvement

**3. (counts 25%)**

**Costs**

Explain the difference between private costs (local costs) and social costs. Show by means of an example why some private costs become transfers when social costs are calculated. Why are social costs more important than private costs in the economic evaluation of health care technologies?

**4. (counts 25%)**

**Screening costs**

Cervical cancer is globally one of the leading causes of cancer mortality in women. The disease is caused by certain strains of HPV virus. The disease is sexually transmitted, and the prevalence of HPV infection in women is highest before the age of 35. It is assumed that it takes many years from the time of infection until invasive cancer is developed. A group of cancer precursors called CIN2+ can be detected through the use of screening tests. Screening for CIN2+ is used as prevention of cervical cancer.

There are two screening tests available to detect CIN2+: Cytology-test and HPV-test. The sensitivity of cytology test is 60% while the specificity is 90%. Its cost is $10 per test. The sensitivity of HPV-test is 99% while the specificity is 70%. One HPV-test costs $20. The prevalence of CIN2+ is 2,5%.

Develop a decision tree model and estimate the cost per detected CIN2+ in each of the two strategies. What is the incremental cost per CIN2+ detected of replacing one strategy with the other? State any assumptions you make in your analyses.