Author's response to reviews

Title: Economic burden of stroke in a large county in Sweden

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Author's response to reviews: see over
Submission of revised manuscript to BMC Health Service Research

We hereby wish to submit enclosed revised manuscript of “Economic burden of stroke in a large county in Sweden”.

Changes which have been made upon comments from reviewers:

Referee 1:

Major compulsory revisions

1. Added value

Last sentence rephrased: “In this paper, compared to previous papers, relevant data were selected to provide a complete picture of the burden of stroke in the county of Västra Götaland in Western Sweden including health care consumption, municipal care, potential productivity loss and informal care by relatives.”

Detailed information from Swedish registries invites a comparison between counties. However, this sentence was removed since it was not elaborated in this county.

2. Data and methods
   2.1 Paragraph “Epidemiology”

Second sentence rephrased: “According to local data of health care consumption from the county council, during 2008, 4 242 stroke events were reported, of which 3 074 cases (72%) were first-ever stroke.”
2.2 Paragraph “Data source”

Sentence added in “Introduction”, second paragraph: “With the social security number, Sweden has a unique possibility to follow one patient throughout the whole chain of health care during a long period of time within the Swedish administrative registries. In this paper relevant data were selected to provide a complete picture of the burden of stroke in the county of Västra Götaland in Western Sweden.”

Sentence added in paragraph “Data source”: “Local data of health care consumption were extracted from the county council of Västra Götaland, containing health care consumption for inpatients care as well as outpatient care. Data for inpatient care contained dates of admission and discharges, primary diagnose (ICD-10) and type of ward and data for outpatient care contained date visit, primary diagnose (ICD-10), type of medical personnel and type of clinic/facility.”

2.3 Paragraph “Data source”

Second sentence rephrased: “Retrospective data were extracted from local administrative register and national clinical register to calculate resources attributable to stroke.”

Sixth sentence rephrased: “To complement and verify the local administrative data, macro data were extracted from a national clinical register, i.e. the Stroke register. We used no individual data from this source. The clinical register includes information on stroke admissions in Sweden, containing information about comorbidity, health-related quality of life, medication, admissions to municipal care and dependence of relatives.”

2.4 Paragraph “Direct cost in health care”

First sentence rephrased: “For estimation of direct costs, data were collected based on an incidence method, to estimate disease cost for first-ever stroke patients for a single year.”

2.5 Paragraph “Informal care volume”

First sentence rephrased: “Estimates of the volume of hours spent on informal care were based on the information in the clinical register, the Stroke register, which were verified by interviews with caregivers and employees within the municipalities.”

2.6 Paragraph “Informal care volume”

Last sentence rephrased: “For patients above 85, this volume of informal care was cut in half since data from the Stroke register on this age group indicated consumption of municipal care to a larger extent before the stroke.”
2.7 Paragraph “Informal care cost”
Second sentence rephrased: “Patients in the age group below 65 were estimated to have relatives in the working age, and were therefore estimated to have a loss of income of 200 SEK per hour which is based on the average income in Western Sweden during 2008 received from Statistics Sweden.”

2.8 and 2.9 Paragraph “Cost for loss of productivity”
Rephrased: “Estimation of cost for loss of productivity was based on sick leave and early retirement, starting in 2008 due to the ICD-10 codes I61, I63 and I64. This information was obtained from the social insurance authority that registers all absence to work in Sweden. To the time of sick leave registered another two weeks were added because this period is not included in the initial phase of sick leave covered by the insurance. The time was calculated in working days and then multiplied by average day income including social security contributions based on the average monthly market income in the county (table 3). Total potential productivity loss was recalculated with a factor that takes into account absence from work due to sickness periods due to other causes such as unemployment and other sicknesses. By this, the employment status of the patients before and after stroke was taken in consideration and a measure of lost social potential production was calculated. The time was calculated in working days and then multiplied by average income including social security contributions, which is a measure of output from a market perspective. The potential productivity loss was estimated based on the human capital approach.”

2.10 Paragraph “Lifetime cost”
Please find our answer to referee 3, comment 5.

2.11 Additional costs
Please find our answer to referee 1, comment 2.3.

2.12 Paragraph “Objectives”
Sentence added in “Data source”: “To calculated the excess cost for stroke, health care consumption data were extracted one year before the stroke onset for each individual and one year after the stroke onset.”

3. Sensitivity analysis
There is no point estimation in the paper. Costs are calculations of the real conditions of the cases that occurred during one year. Factors that may influence the level of cost are explained in the section previous called Sensitivity analysis which we have changed to generalizability and comparability.
Minor Essential Revision

1 Introduction & Objectives
First sentence in “Objective” rephrased: “The aim of this exploratory study was to present the societal costs of first-ever stroke during 2008 in a large county within Sweden with 1.5 million inhabitants.”

2 Introduction: Second paragraph
Rephrased: “Swedish health care system is highly decentralised with three levels, the state, the counties and the municipalities. The state sets the regulations but does not provide care. The counties are providers of all health care including hospital care, acute care and primary care while the municipalities are providers for rehabilitation, long-time care and home aid (figure 1). All units of care, including both counties and municipalities, regardless of provider are financed by local taxes.”

Added figure 1. Please note that previous figure 1 is now figure 2 and so on.

3 Introduction: Second paragraph, last two sentences
Please find our answer to referee 1, comment 1.

4 Result: First paragraph “Excess total costs”
Rephrased: “Patient’s loss of productivity is equal to the value of lost production in society due to absence from work and was estimated to 9% of the total costs.”

5 Tables 1, 2, 3
Rephrased.

6 Table 4, 5, Figure 2
Rephrased.

7 Figure 1
Restructure of the figure.

Referee 2:

1 More information about the Swedish Health care system
Please find our answer to referee 1, comment 2 in minor essential revision.

2 Municipal costs for the elderly above 85
Sentence added: “According to previous studies, informal care is mainly given by the patient’s partner” and three references.
3 The use of Dollars and Euro
Rephrased.

Referee 3:

1 Patients and method/Epidemiology
- Rephrased.
- Further details have been added to paragraphs to clarify our method.

2 Data source
Rephrased, please find answer to referee 1, comment 2.3.

3 Direct cost in health care
Last sentence rephrased: “Costs per contact and hospitalisation day were based on prices in the county which includes overhead costs, equipment costs and personnel cost, and average cost per patient in each age group was calculated.”

4 Municipal costs
Rephrased first sentence: “Municipal costs were calculated based on the change in the use of rehabilitation, long-term care and home aid before and after the stroke respectively based on information from the Stroke register.”

5 Lifetime cost
Rephrased: “Estimation of lifetime costs was based on estimated excess total cost in the first three years after first-ever stroke. The calculation of the first year corresponds to the follow up of patients at the individual level indicating the exact real consumption of health care services, community care and production loss. In the second year costs were estimated based on the information about the discharge of patients. This information includes mortality, survival rates, degree of handicap, change in the need of community service, health care and long sick leave. Future development of costs after three years were adjusted based on data from clinical registries and other studies. Future costs were discounted to present value using a discount rate of 3%. The structure of costs is substantially different the first year after stroke comparing with futures costs. The weight of community costs increases after the first year.”

6 Results
Restructure of table 4.
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