The cost effectiveness of hypertension treatment in Sweden

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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Antihypertensive drug treatment for the prevention of coronary heart disease and stroke.

Type of intervention
Primary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Age groups evaluated were (i) under 45 year olds (ii) 45 to 69 (ii) over 70 years old. The population was divided into four pre-treatment diastolic blood pressure groups: (i) 90-94 mmHg (ii) 95-99 mmHg (iii) 100-104 mmHg (iv) over 105 mmHg.

Setting
The analysis was performed on a hypothetical Swedish population. The economic study was performed in Sweden.

Dates to which data relate
Effectiveness data was taken from a meta-analysis published in 1993. Cost data were from studies published in 1991 and 1993. Prices used were 1992 Swedish Kroner.

Source of effectiveness data
Review of studies.

Link between effectiveness and cost data
Costing was based on data published separately from the evidence on effectiveness.

Modelling
A computer simulation model, based on predicted risk of coronary heart disease and stroke, and survival data after disease events, was used to estimate final health outcomes and costs.

Outcomes assessed in the review
Reductions in CHD and stroke for men and women in different age groups and for different diastolic blood pressure values.
Study designs and other criteria for inclusion in the review
The meta-analysis was not conducted by the authors and details were not given in this paper.

Sources searched to identify primary studies
Not stated.

Criteria used to ensure the validity of primary studies
Not stated.

Methods used to judge relevance and validity, and for extracting data
Not stated.

Number of primary studies included
Not stated.

Methods of combining primary studies
Not stated.

Investigation of differences between primary studies
Not stated.

Results of the review
The risk reduction associated with anti-hypertensive drug treatment was 38% for stroke and 16% for CHD.

Measure of benefits used in the economic analysis
Life-years gained.

Direct costs
The costs of intervention and costs of the disease prevented were taken from another published study, and resources and prices were not separately identified in this paper. Healthcare costs incurred during additional life years were not included. Costs were discounted by 5% and calculated in 1992 Swedish Kroner.

Indirect Costs
Indirect costs of lost production were included. The source of the indirect cost measurement was not given but was probably from one of the published papers to which the authors refer. The costs were assumed to be the same for men and women. No indirect costs were estimated for patients older than 65 years old.

Currency
Swedish kroner (SEK).

Sensitivity analysis
One-way sensitivity analyses were carried out on the following to test the cost per life year gained:
(a) reduction in CHD and stroke according to the 95% confidence interval in the meta-analysis;

(b) pre-treatment risk;

(c) values of risk factors;

(d) survival after different disease events;

(e) disease costs and treatment costs;

(f) quality of life assumptions were tested in the sensitivity analysis (but not as part of the main analysis) only to
determine the direction of change when quality of life was included;

(g) discount rate varied between 0% and 10%.

Estimated benefits used in the economic analysis
The final benefits (life-years gained) were not reported separately from the synthesis of costs and benefits.

Cost results
The annual treatment cost was SEK 3000 (SEK 1600 = drugs, SEK 1100= consultations, SEK 300= transportation and
time). The direct costs of disease varied between SEK 3000 and SEK 60,000 in the first year, and SEK 3000 to SEK
45,000 thereafter. Indirect costs for patients aged 35 to 49 were SEK 30,000 to SEK 120,000 for the first year and SEK
30,000 to SEK 90,000 thereafter. Indirect costs for patients aged 50 to 64 years were SEK 25,000 to SEK 100,000 in
the first year after the event and SEK 25,000 to SEK 70,000 thereafter (in subsequent years).

Synthesis of costs and benefits
Costs and benefits were combined as in cost per life year gained. The discount rate for benefits and cost was 5%, but
this was varied in the sensitivity analysis. The cost per life year gained varied between SEK 1000 for men aged between
45 and 69 with diastolic blood pressure over 105 mmHg to SEK 2,506,000 for women aged under 45 with diastolic
blood pressure 90-94 mmHg. The cost per life year gained decreases with increasing age for men and women. The cost
per life year gained was much higher for women in the younger age groups but this differential narrowed with
increasing age. The cost per life year gained decreased with a higher pre-treatment diastolic blood pressure.

The sensitivity analysis showed that the cost per life year gained was very stable in the oldest age group for both men
and women, with a cost per life year below SEK 100,000 in all analyses. The result was relatively stable for the 46 to 69
year olds, whereas cost per life-year gained varied widely for younger men and women. The decrease in the cost per life
year gained was sensitive, especially to the discount rate. The sensitivity analysis also found that for some patient groups
the inclusion of quality of life factors changes the result. Quality of life was not included in the base case analysis
because of the lack of valid weightings to apply.

Authors’ conclusions
In Sweden it was cost-effective to treat hypertension in middle-aged and older men and women who have a pre-
treatment diastolic blood pressure of more than 90 mmHg, but it was not generally cost-effective to treat mild
hypertension in younger patients.

CRD Commentary
More details on the meta-analysis would have been useful but this was reported in a separate study. Costs results from
another published study were used and their validity and applicability to this study were not tested. Cost details were not
reported in this paper, neither was any explanation given for the derivation of the indirect costs, again these seem to
have been taken from another study. However, the thorough sensitivity analysis of this study helps the generalisability
of the results.
Source of funding
Financial support was received from the National Corporation of Swedish Pharmacies (Apoteksbolaget AB).

Bibliographic details

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Other publications of related interest

Indexing Status
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