

Economic impact of drug-related morbidity in Sweden

– Estimated using experts' opinion,
medical records and self-reports

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This thesis is based on the following studies, referred to in the text by their Roman numerals.

- I. Gyllensten, H, Hakkarainen, KM, Jönsson, AK, Andersson Sundell, K, Hägg, S, Rehnberg, C, Carlsten, A.
Modelling drug-related morbidity in Sweden using an expert panel of pharmacists.
Int J Clin Pharm. 2012; 34(4): 538-46.
- II. Hakkarainen, KM, Ahlström, D, Hägg, S, Carlsten, A, Gyllensten, H.
Modelling drug-related morbidity in Sweden using an expert panel of physicians.
Eur J Clin Pharmacol. 2012; 68(9): 1309-19.
- III. Gyllensten, H, Hakkarainen, KM, Hägg, S, Carlsten, C, Petzold, M, Rehnberg, C, Jönsson, AK.
Economic impact of adverse drug events – A retrospective population-based cohort study of 4970 adults.
PLoS One 2014; 9(3): e92061.
- IV. Gyllensten, H, Rehnberg, C, Jönsson, AK, Petzold, M, Carlsten, A, Andersson Sundell, K.
Cost-of-illness of patient-reported adverse drug events: A population-based cross-sectional survey.
BMJ Open 2013; 3(6): e002574.

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ABSTRACT

Drug-related morbidity is an important public health concern, but knowledge about its economic impact is limited to hospitals. Thus, important consequences to the general public may have been overlooked. The aim of the thesis is to estimate the economic impact of drug-related morbidity in Sweden. Specific aims are to estimate the cost-of-illness of drug-related morbidity in Sweden based on pharmacists' and physicians' expert opinions. Moreover, to estimate the direct costs resulting from adverse drug events, identified from medical records or self-reported in a population-based survey, and to estimate the cost-of-illness of these individuals.

Healthcare professionals' expert opinions were used to estimate probabilities for clinical outcomes of drug-related morbidity. For adverse drug events and resource-use identified from medical records, costs were assigned using Cost Per Patient register data. Resource-use reported by survey respondents and expert panels were assigned unit costs based on national costs statistics. Furthermore, indirect costs were measured by the human capital approach. Cost estimates were prevalence-based and measured from a societal perspective.

Both pharmacists and physicians view drug-related morbidity to be common, and to cause considerable healthcare resource use representing up to 20% of all costs to the healthcare system. The adverse drug events identified from medical records were estimated to cause 1.5% of all drug costs and 9.5% of healthcare costs. Two types of self-reported adverse drug events - adverse drug reactions and sub-therapeutic effect of medication therapy - caused 0.5% of all drug costs, 6.1% of all healthcare costs, informal care, lost leisure time, and sick-leave. It can be concluded that drug-related morbidity causes resource use and harm in all parts of the Swedish healthcare system and the Swedish general public. It appears that sub-therapeutic effects of medication therapy are equally as costly as adverse drug reactions, but there were also costs resulting from other categories (e.g. drug intoxications). Moreover, this group of individuals had high overall resource use and costs; resulting from drug use, healthcare encounters, transportation, productivity loss from both short-term sick-leave and disability pension, and informal care. For patients with repeated encounters and prolonged episodes of drug-related morbidity, there appears to be potential for improving care and saving resources by rapid detection of occurring adverse drug events.

Keywords: drug-related morbidity, adverse drug event, cost-of-illness

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