Drug expenditure in hospitals: what do German ward physicians know?

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Aims Ward physicians hold key positions in the course of efforts to reduce drug expenditures in hospitals. This study evaluated the knowledge of German hospital physicians with respect to the daily therapeutic costs of 21 frequently used drugs.

Methods A questionnaire survey was carried out among 168 ward physicians from university and municipal hospital departments of internal medicine.

Results One hundred and twenty-seven physicians returned a completed questionnaire, a response rate of 75.6%. On average the physicians successfully identified both low cost and expensive drugs. The prices of inexpensive and moderately expensive drugs were generally overestimated whereas those for the expensive and highly expensive drugs were underestimated in 35% and 68% of respondents, respectively.

Conclusions The results of this survey of German hospital physicians suggest that a more economically efficient use of drugs could be achieved by an improved knowledge of daily therapeutic costs.

Keywords: cost containment, daily therapeutic costs, drug expenditure, hospital, questionnaire survey, rational drug therapy

Introduction

Over the last few decades an increasing amount of Germany's gross domestic product has been spent on health, which has led to the introduction of cost containment [1–2]. The efforts to reduce costs also affected hospitals, which were responsible for 21% of Germany's total health expenditure in 1993 [3]. As a result of measures taken in the period from 1992 to 1995, 54 hospitals were closed down, reducing the number of beds by 5.9% to 609 000. The average length of stay in hospitals was reduced from 14.0 to 12.1 days. Despite these efforts, the expenditure for hospitals increased by 15.9%, showing the need for further hospital cost savings [4].

With respect to efforts to reduce drug expenditure in German hospitals, ward physicians hold a key position, as they decide which drug is to be used. The aim of this study was to ascertain the level of knowledge of ward physicians in regard to the costs of commonly used drugs.

Methods

The study was carried out as an anonymous questionnaire survey among ward physicians from departments of internal medicine in three university and four municipal hospitals. On average the clinical experience of the physicians was 3 years.

The questionnaire stated the generic name, a popular brand name and an indication for each drug and requested the frequency of usage by each physician, the average daily dosage (in mg) and the estimated daily therapeutic costs (in German Marks, DM). Three options were given for the frequency of usage: frequently = at least once daily, occasionally = at least once weekly, rarely = less than once weekly. The price estimates were adjusted to a standard dosage, which was taken from the manufacturer's product information and the DrugDex® database. The time required for filling out the questionnaire was about 10 min.

Twenty-one drugs were chosen for their frequent and common use in hospital by analysing a turnover list of the Hannover Medical School (MHH) and the drug reference lists of several other hospitals. The drugs were selected from a wide range of indications covering both

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inexpensive and expensive agents. The physicians were not asked to classify the drugs but simply to state a price for daily therapeutic cost. The actual cost of each drug was calculated from the standard dosage and the average price that the hospitals were charged. For evaluation, the 21 drugs were divided into four classes according to their daily therapeutic costs (dte) (inexpensive = dte less than 1 DM, moderately expensive = dte between 1 and 10 DM, expensive = dte between 10 and 50 DM and highly expensive = dte between 50 and 100 DM).

Head physicians of the departments of internal medicine were initially approached and gave permission that their clinical staff could be surveyed during or after one of the daily departmental meetings. The latter were not informed beforehand and were asked to fill out the questionnaire immediately. This approach insured that most physicians participated in the survey and that answers were given without any prior preparation.

Absolute deviations in DM of the physicians' estimates from the actual therapeutic costs were calculated for each class of drugs and then related to the frequency of usage. The deviations were divided according to their magnitude into six classes (< -50 DM, -50 DM to -5 DM, -5 DM to 0 DM, 0 DM to 5 DM, 5 DM to 50 DM, > 50 DM).

Results

A total of 168 questionnaires was handed out and 127 (75.6%) were completed and returned.

On average, physicians' estimation of costs correlated with actual prices. However, the range of estimated costs increased with the actual costs (inter quartile range of 4.30 DM for the inexpensive drugs and 30.00 DM for the most expensive ones) (Figure 1).

Figure 1 Cost of daily therapy by German hospital physicians. The median, the quartiles and the 5th and 95th percentile of the estimated costs for each of the four drug price bands.

Costs for the inexpensive and moderately expensive drugs were generally overestimated whereas those for the two most expensive drug classes were underestimated in 35% and 68% of all questionnaires, respectively. Twenty-five percent of the estimates for the most expensive drugs deviated more than -50 DM from the actual costs and an additional 35% were within the -5 to -50 DM range (Figure 2).

Prescribing frequency did not influence whether the correct price was known for the inexpensive drugs. However, for the moderately and more expensive ones the percentage of replies within the 5 DM range increased with prescribing frequency. For the most expensive drugs, price estimates deviating more than ± 50 DM from the actual costs were found more frequently in case of rare usage (50%) than for occasional (41%) or frequent (25%) prescription (Figure 2).

Discussion

To our knowledge this study is the first attempt to evaluate the knowledge of ward physicians in regard to the costs of commonly used drugs. The chosen approach, the completion of a questionnaire given at short notice and under identical conditions, proved to be highly effective with a participation rate of 75.6%. Comparable studies were found only for general practitioners in the UK. These studies gave similar results, although the approach was different in that postal questionnaires were used and percentage deviations from the actual costs were calculated [5-6].

The present results show that the knowledge of most physicians was sufficient to decide whether a drug was expensive or inexpensive. Physicians' estimates for the inexpensive drugs were quite consistent, a finding that contrasted with that for the more expensive drugs, where estimates varied widely.

Prescribing frequency only influenced estimates of cost for the highly expensive drugs. Nevertheless even in the case of the latter that are prescribed frequently, price underestimations of more than -50 DM were found in 18% of questionnaires.

Owing to a general underestimation of the costs of expensive and especially the most expensive drugs together with an overestimation of the costs of cheaper drugs, it is doubtful whether a ward physician would be able to substitute an expensive for a moderately expensive drug. Thus it is likely that the ward physicians will recognize large price differences between drugs, but will face problems when cost differences are smaller.

In conclusion, the results of this survey of German hospital physicians suggests that a more economically efficient use of drugs could be achieved by an improved knowledge of daily therapeutic costs. Further information

Figure 2 Over and underestimation of the daily therapeutic costs (dtc) of drugs by German hospital physicians. The percentage and the magnitude of under- and overestimation of the dtc for each of the four price categories of drugs in relation to the frequency of usage (□ up to ± 5 DM; ▨ ± 5 to ± 50 DM; ■ more than ± 50 DM). Each bar represents the sum of all the estimates for a given prescribing frequency. The relative position of the bars to the y axis indicates whether the costs were generally over or underestimated. The magnitude of over or underestimation of the dtc is indicated within each bar. For example for highly expensive drugs, 28.5% of physicians underestimated the dtc of rarely prescribed drugs by more than 50 DM (top bar).

on the costs of drug therapy together with the introduction of therapeutic guidelines for the more expensive drugs is needed in order to reach a higher standard of therapy at the best possible price.

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