

DEVELOPMENT OF A PREDICTIVE MODEL FOR ESTIMATING FUTURE DRUG EXPENSES

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OBJECTIVE

To develop a predictive model that more accurately estimates future costs of expensive drugs.

BACKGROUND

Drug expenses are increasing. Especially novel drugs affect the expenses significantly and existing budgeting forecasts have hitherto not contained accurate enough parameters for precise forecasting.

We needed a model that could predict future drug expenses with a low margin of error to assist in budget planning.

VIEW OUR PREDICTIVE MODEL
SCAN THE QR CODE



METHODS

We identified that 30 of the most expensive drugs (measured on the 5th ATC level) were responsible for 75 % of drug expenses.

We assessed which parameters affected drug expenses and identified what they depended on. Based on this, we assessed data needed in our model and included them in a Microsoft Excel spreadsheet with ATC codes and correlated costs.

We created a spreadsheet for each ATC code with this information:

- ATC code and generic name
- Indications
- Dosage and duration of treatment
- Number of patients per indication
- Number of packages/patient/year per indication
- Drug price

Clinical pharmacists collected data from the wards regarding clinical usage and number of patients.

The model was continuously validated by comparing estimated expenses to current usage. Any deviations of individual ATC code were reviewed in relation to the data collected by the wards.

RESULTS

Our final model is a Microsoft Excel spreadsheet containing the identified ATC codes and essential parameters affecting the drug expenses: Novel drugs, extension of indications, patent expiration, clinical usage, number of patients and drug price.

Entry of data provided an estimate for the future drug expenses. Evaluation of our model at the end of 2016 showed a 2 % margin error between estimated and actual drug expenses.



DISCUSSION AND CONCLUSION

This study showed that identification of essential parameters affecting drug expenses makes it possible to establish a predictive model for estimating future drug expenses with a low margin of error (2 %). The model is, however, only as good as the included data, why continuous data updating is paramount.

Our model is able to forecast drug expenses more accurately than pre-existing forecasts and thereby assist in the budget planning. The model is implemented in our daily work and all new expensive drugs are continuously included.

