

Thesis title:

The use of administrative data sources in managing pharmaceutical treatment and care of elderly patients

Abstract

In this dissertation research related to issues of managed care of elderly patients, with particular focus on the safety of pharmacotherapy by assessing the demand for individual medication management, was conducted. The aim of this thesis was to propose a concept of using information from secondary data sources, such as claims data in the statutory health insurance system, to identify patients at high risk of drug related problems due to polypharmacy that require individual medication management. It was achieved based on following objectives: co-establishing a system for collecting and processing claims data from statutory health insurance funds and developing a predictive model to identify patients at high risk of drug related problems due to polypharmacy. Drug related problem was defined as hospital admission preceded by polypharmacy.

This thesis deals with issues of health care management by taking into account the methods of statistical data analysis. The dissertation consists of four chapters, two of a theoretical nature, and two documenting the development of an original system for identifying the need for individual medication management among elderly patients. The first chapter was devoted to demographic and epidemiological trends and their implications for health care systems in selected countries, as well as the challenges related to the use of pharmacotherapy in older adults. The second chapter describes the public health care system in Germany and presents a literature overview on managed care as well as legal regulations of its instruments in the German legislation. Furthermore, the main areas of using secondary data sources in the process of managed care were distinguished in this part of the thesis. The third chapter presents the system for collecting and processing data from health insurance funds. Within the chapter characteristics of the database and the development of the data validation process are discussed. Moreover, the theoretical foundations of the knowledge discovery process used to structure the results of the empirical research were presented. In the last chapter, a logistic regression model was used to identify patients at increased risk of hospital admission preceded by polypharmacy and therefore to define criteria for assessing the demand for managed care among the elderly. The conducted study allowed for the identification of universal factors contributing to the likelihood of hospital admission, thus providing the basis

for developing a risk management strategy in this area and enabling a personalized approach to the patient by identifying an individual constellation of risk factors before taking measures. The results of the analysis also indicated the importance of patient adherence to medication safety in polypharmacy. Therefore, a measure describing adherence in the form of an index specified through expert interviews and derived from claims data was introduced.

Thus, the conclusions of the dissertation allowed for the formulation of the concept of assessing the demand for individual medication management based on two measures: the risk of hospital admission preceded by polypharmacy and the expected treatment adherence of patients. The schemes of actions and models presented in the dissertation are to a large extent solution that can be adapted to various healthcare systems. Adjustment of these proposals to national systems is possible by taking into account country's specific conditions. However, the results may also constitute the foundation for constructing own detailed solutions within further research.