



Regional differences in the prescription development process of new drugs through the example of the antidiabetic agent liraglutide

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Abstract

Background:

The additional benefit of new drugs is often questioned by experts. Data about the regional prescription development is rare. The objective of this study was to show the prescription development process of new drugs through the example of the antidiabetic agent liraglutide. It is the second agent of the GLP-1 analogs. Regarding cost, benefit and risk aspects, the Joint National Committee recommends the use of GLP-1 analogs just for adipose people with type 2-diabetes who cannot achieve a sufficient glucose control with oral diabetes drugs.

Method:

The analysis is based on the complete nationwide drug prescription data in accordance with § 300 SGB V from 2009 to 2012. We used the ATC codes to identify the number of prescriptions for liraglutide (A10BX07), exenatide (A10BX04) and the group of the blood glucose lowering drugs, exclusive insulins (A10B). To estimate the population-based use of liraglutide, we calculated the regional prescription rate on district level and adjusted for age.

The two step cluster analysis was performed to identify administrative districts with similar prescription developments. We analyzed the produced clusters with descriptive statistics, comparing the average health status of the cluster's population, the health care supply of the region and geographic factors. Afterwards the influence of these factors was estimated, using multinomial logistic regression models.

Results:

The number of prescribed packages rose between 2009 and 2012; the highest increase was observed directly after the market launch. Comparing the prescriptions of the first two glp-1 analogs, the liraglutide prescriptions exceeded the exenatide prescriptions since 2010.

The prescription development was similar for GPs and specialists (gastroenterology cardiology, nephrology, pneumology, hemato-oncology, endocrinology and other internists). Comparing the liraglutide prescriptions in proportion to the blood glucose lowering drugs exclusive insulins, specialists prescribed about 2.8 times as much liraglutide as GPs since 2010. Both, GPs and specialists prefer liraglutide over exenatide.

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The prescription development analysis on district level revealed that four clusters were necessary to categorize the districts according to their prescription development and intensity. We identified cluster-related differences in the population's health status and the outpatient health care supply. Districts with rising prescription rates had significantly higher health and social burdens. They were mainly located in the so-called new federal states in the East of Germany. On the other side, the health status of the population was above average in districts with a constant level of prescriptions. Most of these districts were located in the Western federal states of Germany. We also found differences in the intensity of health supply structures. Districts with a high amount of outpatient medical practices had higher prescription rates than other regions. The results were confirmed by the regression models.

Discussion / Conclusion:

The high initial liraglutide prescription rate indicates that the new antidiabetic agent was early accepted and prescribed by doctors. The Joint National Committee recommended the use of GLP-1 analogs just for adipose diabetics under certain circumstances. There were similar prescription developments in other European countries. In comparison to Denmark and Great Britain, however, the amount of prescribed packages was low in Germany.

The analysis on district level showed that the health status of the population (morbidity) as well as the health supply structures in the region (physician density) correlates with the prescription development. The impact of hospitals as an initiator of the pharmaceutical treatment could not be determined with the existing data. Further research is needed with additional information and special study designs. Besides, other studies shall be conducted to evaluate the prescription process of other new drugs with the aim to find regularities in the drug prescription development.

Keywords:

Diabetes, drugs, regional variation, antidiabetic agent, GLP-1 receptor agonists, liraglutide, exenatide

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