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Understanding which factors influence reimbursement approvals

- The reimbursement application process for pharmacotherapies is complex and context-specific, depending on country, region, and healthcare system.
- This study sought to identify the most relevant factors influencing the reimbursement decision for anti-obesity medication (AOM) using a prediction model.

Restricting subgroups based on BMI, high-risk of CVD and Type 2 **Diabetes increases probability of** approval

Prediction model based on observed reimbursement applications and decisions

• Data on reimbursement decision, drug effect, price, subgroup specification, and other key parameters were collected from 39 AOM reimbursement applications from 13 countries.

Table 1 Data collection overview



- Data was collected from national databases on reimbursement decisions and supported by data on file to accommodate for lack of public information on rejected applications.
- The AOMs covered in the data collection included: Wegovy®, Saxenda®, MySimba®, Accomplia®, Contrave®, Xenical®, and Zimulti.
- Data describing country-specific characteristics related to obesity and healthcare were included. In total, 31 parameters were tested.
- Adaptions were made to make the model applicable to a real-world setting.
- Final model was assessed based on area under the receiver operator curve (ROC) and accuracy.



Using Machine Learning to Predict HTA Approval: Importance of Patient Subgroup Specification within Obesity

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Five key prediction parameters were identified

- The final model was described as a logit function. The predictive parameters were price, body-mass index (BMI) threshold, high-risk of cardiovascular disease (CVD), type 2 diabetes (T2D), and private share of total healthcare expenditure (%).
- A price increase predicts a reduced probability of approval (-0.390). Increasing the BMI threshold in the application increases the probability of approval for the AOM (0.347). Specification of T2D and high-risk of CVD increased the probability of approval (1.193 and 0.366, respectively). Finally, countries with a higher share of private healthcare expenditure, as compared to public, have a higher probability of approving AOMs (0.035).



Restricting patient subgroups has great impact on the predicted probability of approval

- The final model showed that restricting subgroups based on BMI threshold, high-risk of CVD and T2D in the application increased the probability of approval.
- In contrast, price increases led to a decreased likelihood of approval. These findings highlight the importance of identifying patient groups with the highest unmet medical needs to control budget impact but at the same time secure broad access for patients.

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