

Economic analysis of costs and resource consumption of Ixazomib in patients with relapsed / refractory multiple myeloma in Austria

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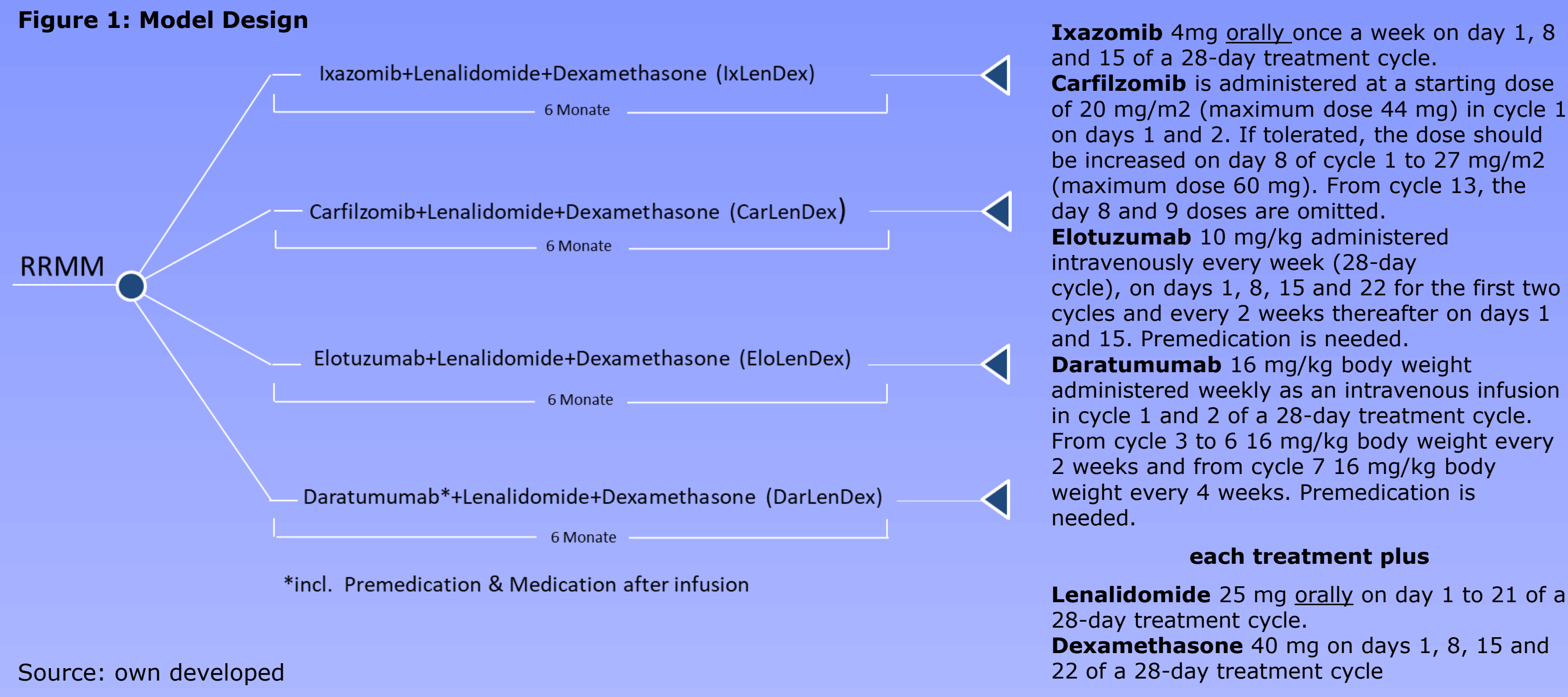
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Objectives

Multiple myeloma (MM) is a progressive, fatal cancer that affects the plasma cells. It accounts for 1% of all malignancies and 10% of all hematological cancers. In Austria, nearly 350 people are newly diagnosed every year. The nationwide, age-standardized incidence of MM for 2015 is 4.9 per 100,000 inhabitants. The aim of this cost comparison is to analyse differences in resource consumption and costs of treatment alternatives administered in different settings. Oral Ixazomib was compared with infusible Carfilzomib, Elotuzumab and Daratumumab, all in combination with Lenalidomide and Dexamethasone. Daratumumab requires premedication.

Methods

A costing model with a six month time horizon was developed from the payer’s perspective expressed in 2017 Euros. The main objective of the model was to assess differences in resource consumption (medication, personal, material, monitoring and day clinic) and related costs. In order to conduct the analysis a bottom-up micro-costing approach was carried out. Personal, material and monitoring costs were calculated based on a resource utilization survey via questionnaire (n=29).



Resource Use and Costs

Resource use of the cost component was assessed using expert consultations and literature sources. The prices used for the analytical cost comparison were taken from current price lists and from the fee regulation of the Public Health Insurance and the product/service list. Costs were illustrated using recent Austrian data for the year 2017 on a monthly and annual basis per patient. However, this basis constitutes a hypothetical scenario and does not reflect the actual duration of therapy.

Medication costs: were calculated on the basis of the required dosage and cycles for a patient with a median body weight of 75kg and a body surface of 1.75m². Volumes were multiplied with drug costs (Manufacturing prices for cancer drugs administered in a day clinic and reimbursement prices for outpatients/oral cancer drugs).

Personal costs: time spent by each category of personnel (oncologist, nurse, and pharmacist) for the administration of anti-cancer therapy was recorded. Time requirements for the activities (preparation of therapy, installation/connection and disconnection of therapy, patient information, activities associated the Porth-a-Cath, administration of concomitant medication and monitoring of the infusion) were combined with the average wage costs of the personnel involved in the above mentioned activities (**Figure 2A** and **Table 2B**).

Material costs: are the costs of disposables (sterile gloves, masks and headwear, garments and overshoes, syringes, needles, cannulas, swabs, Sterifix® filter and labels). Required units were multiplied with list prices.

Monitoring costs: in the case of monitoring costs, a distinction is made between outpatient (for oral therapy) and inpatient (in the case of infusions) costs. In the outpatient setting a specialist visit and a blood test per cycle was required. In the inpatient setting, the costs are again determined by personal costs (**Table 2C**).

Costs for day clinic stays: for the administration of anti-cancer drugs as infusion day clinic visits in the inpatient setting are recorded in terms of costs.

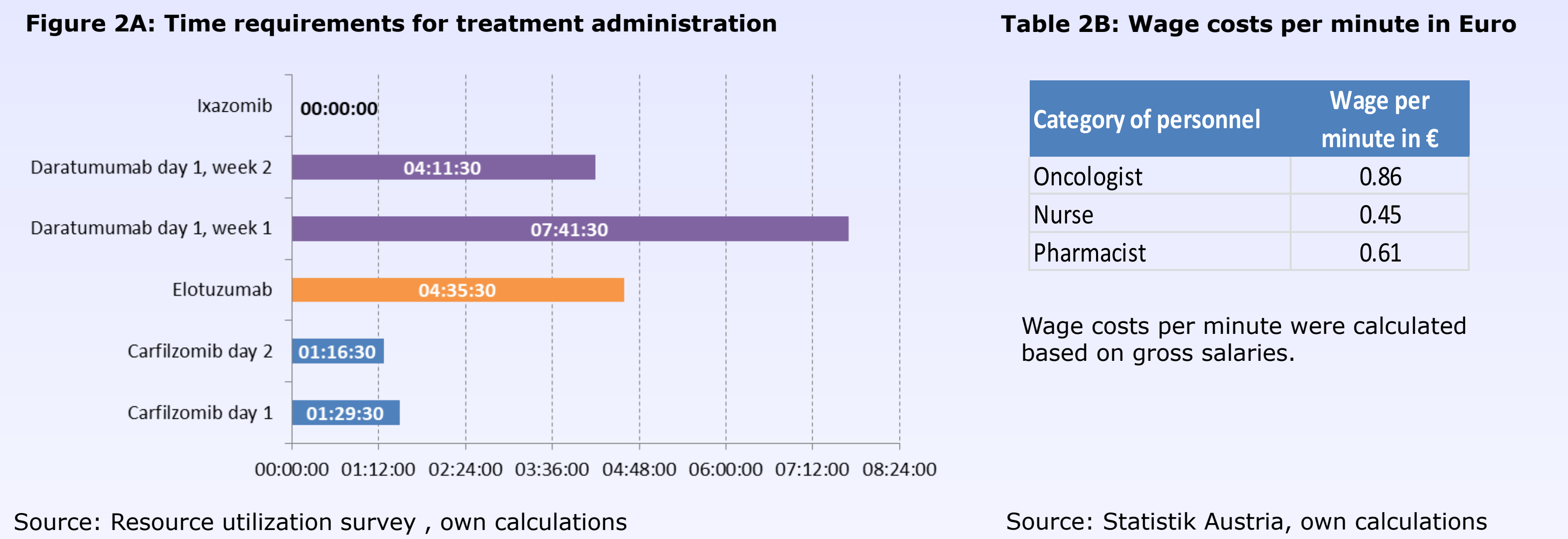


Table 2C: Time requirements for the monitoring in the inpatient setting

Monitoring cost components	Time requirements and visits
Patient information (first time)	31 min
Duration of patient visit	13 min
Duration of a blood test	10 min
Number of blood tests per month	4 times
Number of controll visits per per month	2 times

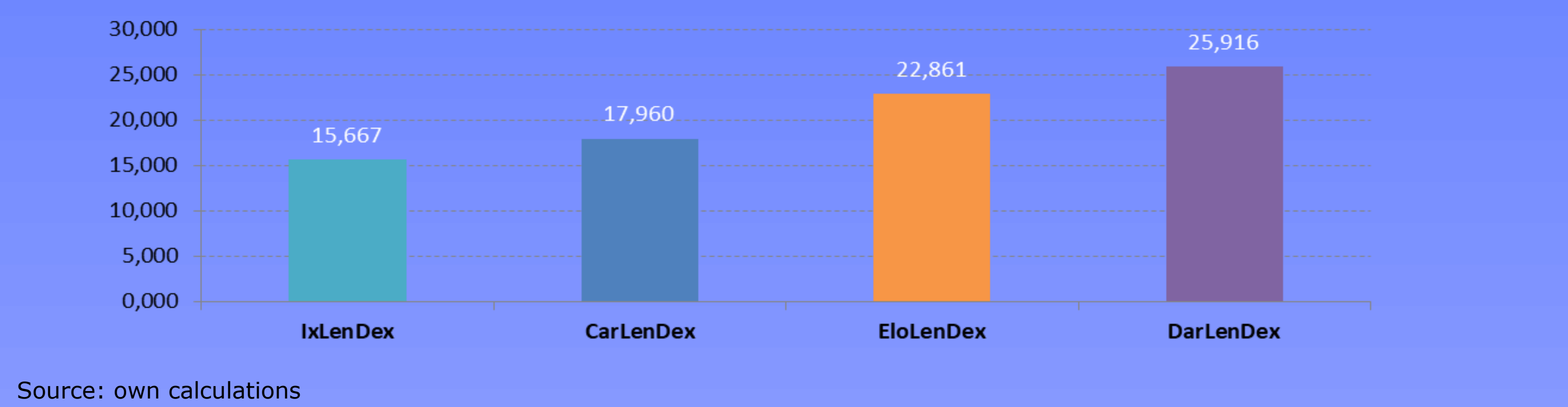
Source: Resource utilization survey , own calculations

All cost components were calculated over a 6 month time horizon. Discounting of costs was not necessary.

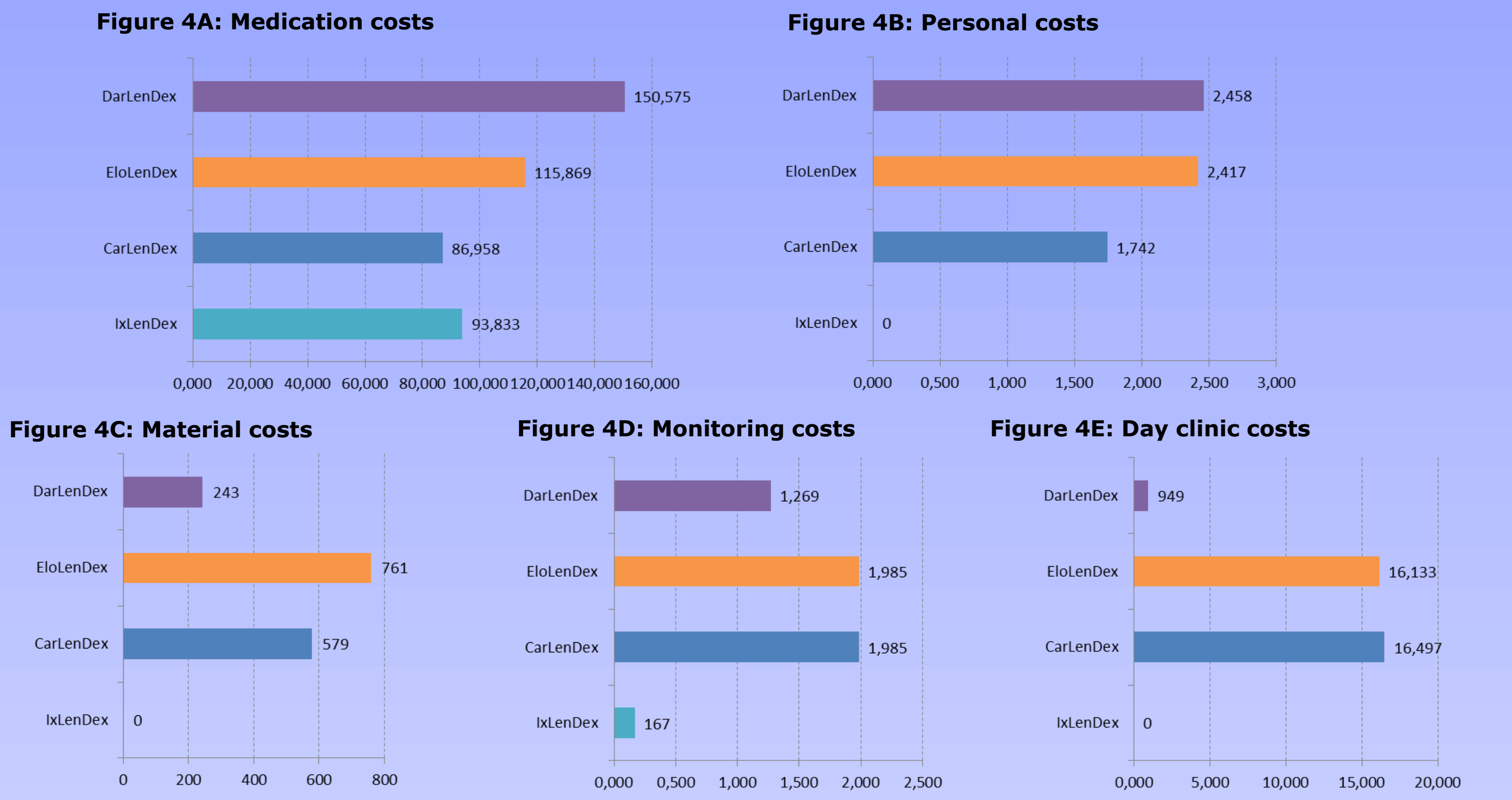
Results

Total treatment costs for Ixazomib+Lenalidomide+Dexamethasone (IxLenDex) amount to 94,000 € over a time horizon of 6 months. Carfilzomib+Lenalidomide+Dexamethasone (CarLenDex) is associated with 107,762 € and costs for Elotuzumab+Lenalidomide+Dexamethasone (EloLenDex) amount to 137,166 €; Daratumumab+Lenalidomide+Dexamethasone (DarLenDex) accounts for 155,494 € within the same period. Treatment costs for IxLenDex are 65% below DarLenDex costs, 46% lower compared to EloLenDex and 15% under CarLenDex.

Figure 3: Total treatment costs per month in Euro (2017) in Austria

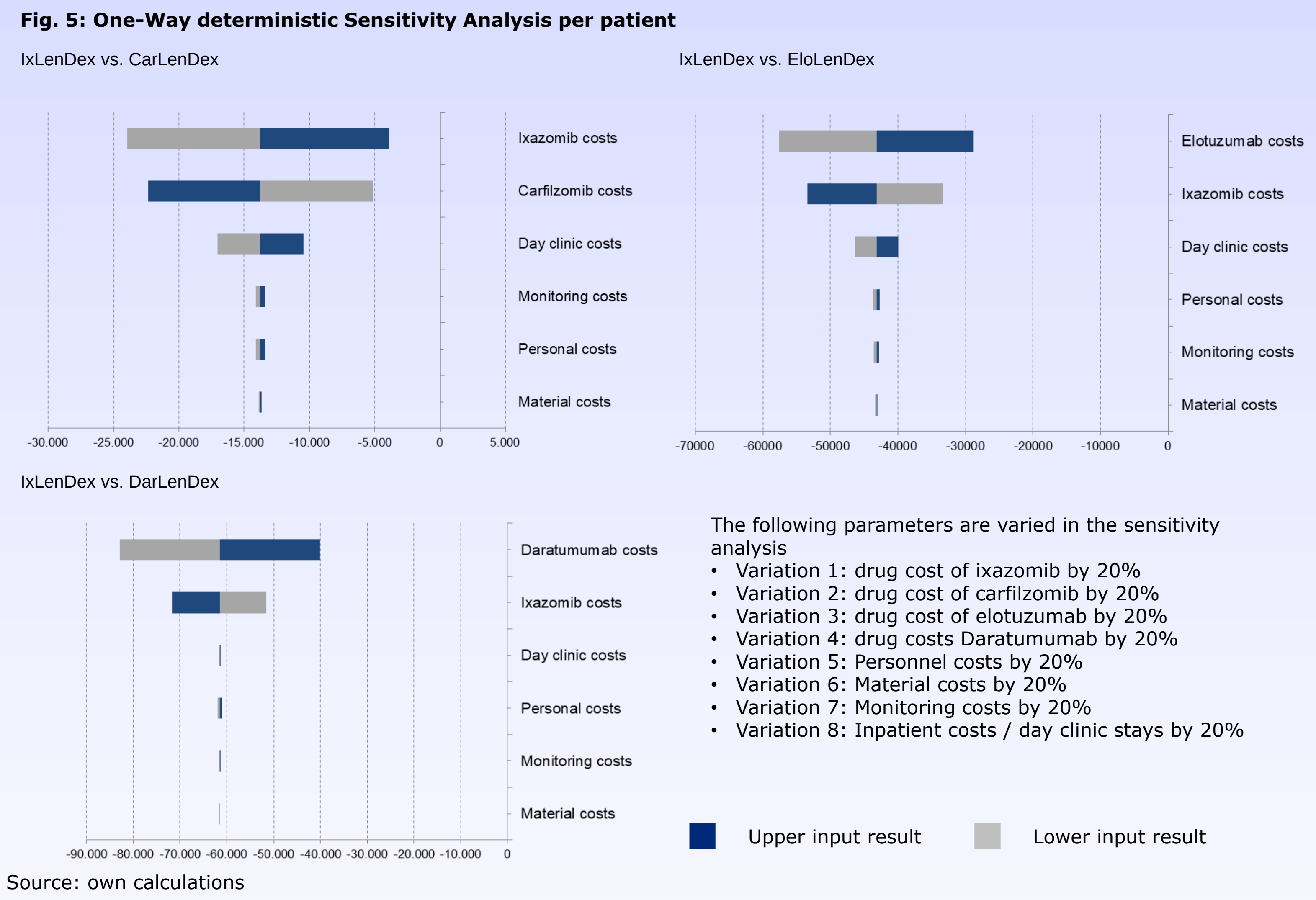


The lower costs of IxLenDex are partly due to the lack of personal and material costs in the hospital setting as well as costs for the day clinic, as IxLenDex is administered orally compared to CarLenDex, EloLenDex and DarLenDex. Lowest medication costs of CarLenDex were offset by higher drug administration costs. A disaggregated overview of cost components is presented below (**Figure 4A-E**).



Sensitivity Analysis

Deterministic sensitivity analysis was carried out in order to assess the impact of variation in the respective variable on the final result. **Figure 5** displays results per patient. Savings for IxLenDex still remain as a result of all variations.



The highest impact on the results was found to be medication costs followed by day clinic costs. Material costs show minor impact on results.

Conclusion

The economic analysis shows that the use of IxLenDex is associated with cost-savings. Oral administration saves resources and relieves the inpatient sector.

References

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