Simulation of the impact on LDL-C targets and treatment cost in high and very high cardiovascular risk patients of cost-based sequencing of lipid-lowering therapy

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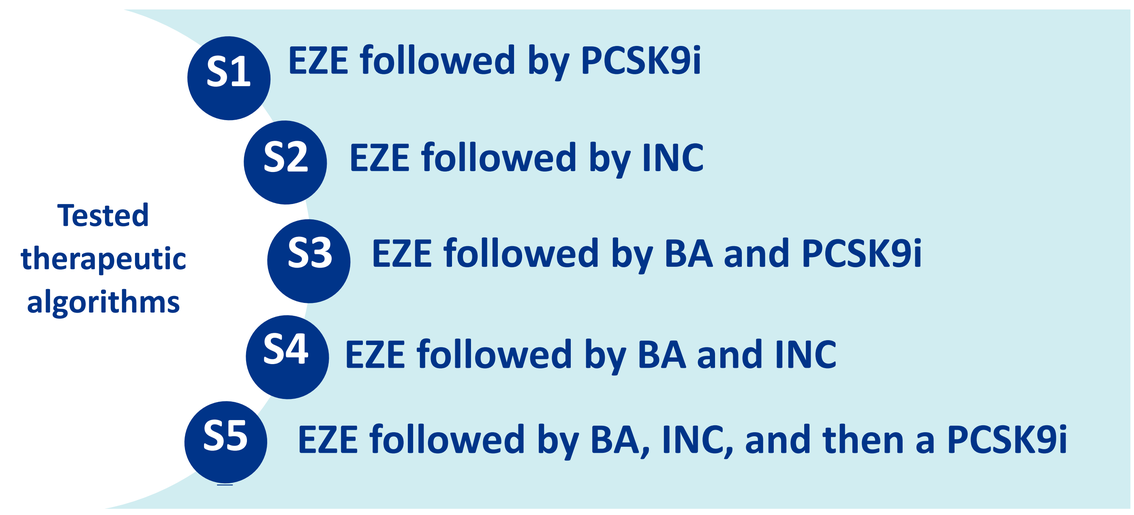
INTRODUCTION

- Achieving LDL-C targets remains challenging for Spanish patients at high (HR) or very high (VHR) cardiovascular risk, despite treatment with statins and/or ezetimibe (EZE).[1,2,3] Escalation to PCSK9i or inclisiran (INC) is limited due to budgetary concerns.[4]
- This study evaluated the clinical and economic impact of lipid-lowering treatment escalation algorithms including bempedoic acid (BA) before PCSK9i or INC in high or very high cardiovascular risk patients not achieving LDL-C targets in Spain.

METHODS

- Anonymized patient-level data was extracted from the IQVIA Electronic Medical Record database, covering October 2022 to September 2023, a database which represents the entire public health care infrastructure of three distinct regions in Spain, comprising approximately 3% of the Spanish population.
- A Monte Carlo simulation was applied to data from Spanish adults with HR or VHR and uncontrolled LDL-C despite at least 4 weeks of statin treatment with or without EZE.
- Patients without LDL-C results, already on BA, PCSK9i or INC, or who had achieved LDL-C target (VHR: <55mg/dL, HR: <70mg/dL[3]) were excluded.
- Five therapeutic algorithms were tested, as depicted in **Figure 1**.

Figure 1. Therapeutic algorithms tested in the model



- When LDL-C targets were not met after the simulation, the effect of treatment was reversed (as exemplified on Figure 2 for S3).
- LDL-C lowering efficacy was based on published evidence (**Table 1**). Pharmacological costs were calculated using public prices.

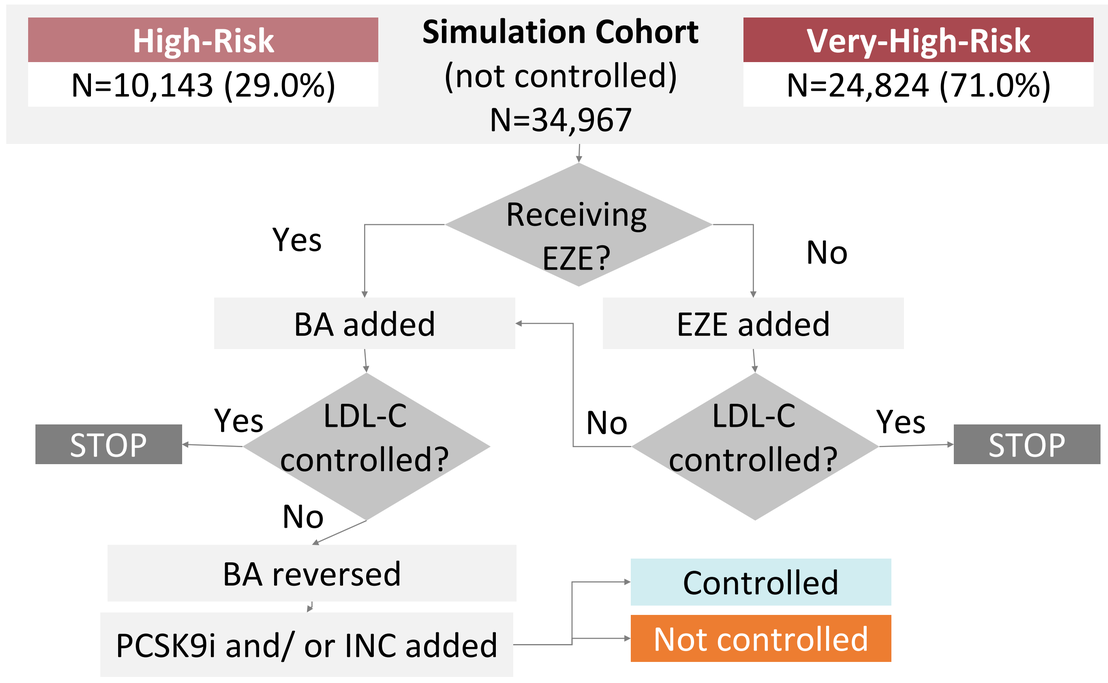
Table 1. Efficacy parameters for drug effects simulations and the annual treatment costs

Drug	Mean difference in % change in LDL-C level, Mean (%CI)[5]	Annual treatment cost[6]
EZE	-24.5% [-27.5%, -21.5%]	€402
BA	-22.8% [-26.8%, -18.8%]	€1,020
PCSK9i	-63.7% [-67.6%, -57,9%]	€6,278
INC	-50.2% [-55.0%, -45.4%]	€4,696

RESULTS

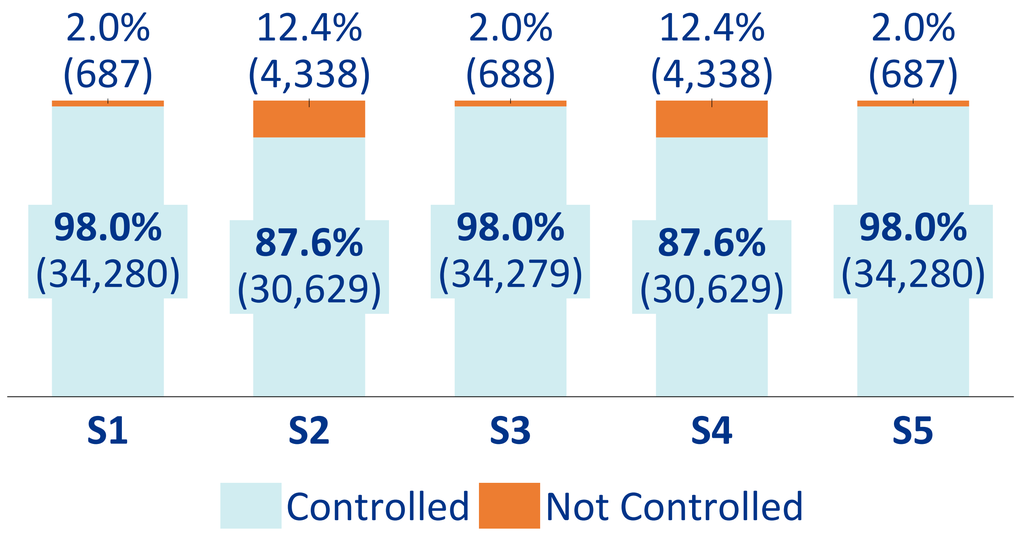
- The study cohort comprised 34,967 patients, with 29% high-risk and 71% very high-risk (**Figure 2**).
- Mean ± standard deviation baseline LDL-C was 109±40 mg/dL.

Figure 2. Simulation cohort



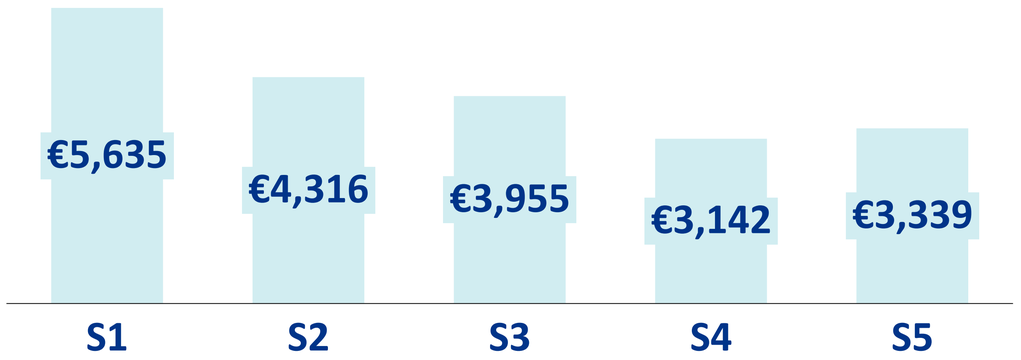
- All algorithms including a PCSK9i achieved LDL-C control in 98% of patients (S1, S3, S5), whereas those with INC it achieved it in 88% (S2, S4), as shown in **Figure 3**.
- In algorithms where BA is positioned before PCSK9i or INC, the same percentage of patients achieve their treatment targets.

Figure 3. Patients with LDL-C level controlled vs. not controlled (n, %)



- The annual cost per treated patient was the highest in the algorithm S1 (€5,635), followed by S2 (€4,316; -23%), S3 (€3,955; -30%), S5 (€3,339; -41%), and S4 (€3,142; -44%) (**Figure 4**).

Figure 4. Annual treatment cost per patient (€ per patient)



- Introducing BA prior to injectable therapies resulted in significant cost reductions while achieving the same level of control as with algorithms that do not include BA.

CONCLUSIONS

- In patients with high or very high cardiovascular risk not controlled with statins and EZE, early inclusion of BA in treatment algorithms can achieve a similar share of patients with controlled LDL-C levels while significantly reducing budget impact.
- Cost-based sequencing provides an efficient approach for healthcare systems.

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ABBREVIATIONS: BA, bempedoic acid. CI, confidence interval. EZE, ezetimive. INC, inclisiran. LDL-C, low-density lipoprotein cholesterol.

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