Cost analysis of patiromer versus sodium zirconium cyclosilicate for the treatment of hyperkalemia in the UK, Italy and Spain

Antonio Ramirez de Arellano[1], Gregory Allen[2], Barnaby Hunt[2]

[1]CSL Vifor, Glattbrugg, Switzerland, [2]Ossian Health Economics and Communications, Basel, Switzerland

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INTRODUCTION

- Hyperkalemia is a serious medical condition that can cause potentially fatal cardiac arrhythmias, muscle weakness and paralysis, typically defined based on a serum potassium concentration above the normal range of 3.5–5.0 mmol/L.[1]
- While hyperkalemia is relatively rare in the general population, it has a high prevalence in people with impaired kidney function, diabetes and heart failure.[2]
- However, there is a paucity of data on the true economic and humanistic burden of hyperkalemia due to the different reported definitions and thresholds.
- A recent real-world study has evaluated two modern treatments for hyperkalemia, potassium binders patiromer (Veltassa™) and sodium zirconium cyclosilicate (SZC, Lokelma™), and patiromer was associated with a statically significant reduction in the incidence of severe edema compared with SZC, as well as numerical reductions in the incidence of hospitalization for heart failure and mortality.[3]

OBJECTIVES

- The aim of this study was to evaluate the costs associated with patiromer and SZC for the treatment of hyperkalemia in the UK, Italian and Spanish settings.

METHODS

- A model was developed in Microsoft Excel to compare the costs associated with patiromer and SZC for the management of hyperkalemia at both the patient- and population-level.
- Clinical event rates were taken from a real-world comparative study in non-dialysis-using adults initiating patiromer or SZC between May 2018 and September 2020, using Optum's Clinformatics Data Mart Database (Table 1).[3] The base case captured the statistically significant reduction in severe edema with patiromer versus SZC, with no difference applied in the rate of hospitalization for heart failure as this did not reach statistical significance. A sensitivity analysis was performed including this observed reduction with patiromer.[3]

Table 1. Clinical event rates

Event	Event rate, per 100 person-years		Hazard ratio with SZC versus patiromer (95% CIs)
	Patiromer (n=2,839)	SZC (n=1,126)	
Hospitalization for heart failure (any)†	25.1	35.8	1.22 (0.95–1.56)
Hospitalization for heart failure (primary)‡,§	9.4	12.2	1.15 (0.76–1.74)
Death§	7.2	9.3	1.16 (0.73–1.86)
Severe edema	3.4*	7.1	1.89 (1.05–3.39)

CI, confidence interval; SZC, sodium zirconium cyclosilicate. *Statistically significant difference at 95% confidence level. †Defined as a hospitalization with a discharge diagnosis of heart failure in any position, only applied in a sensitivity analysis. ‡Defined as a hospitalization with a discharge diagnosis of heart failure in the primary position. §Not applied in the present analysis.

- Country-specific costs, expressed in 2022 pounds sterling (GBP) and euros (EUR), were evaluated from healthcare payer perspectives in the UK, Italy and Spain and included pharmacy costs and costs of clinical events, as well as country-specific dosing (Table 2).
- Population-level results were extrapolated based on total populations (67 million, 59 million and 48 million in the UK, Italy and Spain, respectively) and national prevalences of hyperkalemia (1.90%, 0.04% and 0.60% in the UK, Italy and Spain, respectively).[4,5,6]

Table 2. Costs and dosing applied in the analysis

Country	Acquisition cost per 30-sachet pack				Dose proportions			
	Patiromer		SZC		Patiromer		SZC	
	16.8 g	*8.4 g*	*10 g*	*5 g*	*16.8 g*	*8.4 g*	*10 g*	*5 g*
UK, GBP	172.50	172.50	312.00	156.00	4%	96%	42%	56% daily, 3% every other day
Italy, EUR	268.64	253.72	494.36	247.10	10%	90%	42%	56% daily, 3% every other day
Spain, EUR	270.00	192.00	243.00	178.80	12%	88%	42%	56% daily, 3% every other day

EUR, 2022 euros; GBP, 2022 pounds sterling; SZC, sodium zirconium cyclosilicate.

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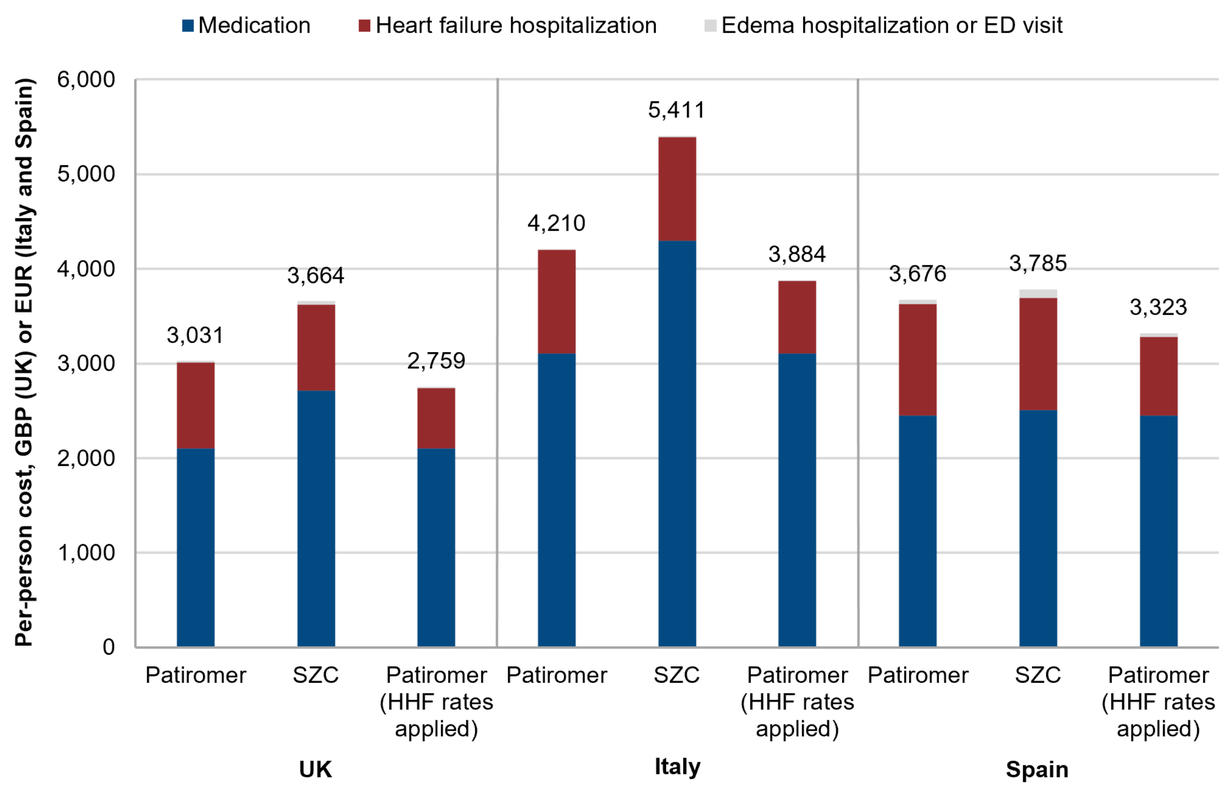
DISCLOSURES

This study was supported by funding from CSL Vifor.

RESULTS

- Patiromer was associated with cost savings of GBP 630, EUR 1,197 and EUR 107 per person-year of treatment versus SZC in the UK, Italy and Spain, respectively (Figure 1), primarily due the lower costs of patiromer and edema compared with SZC.

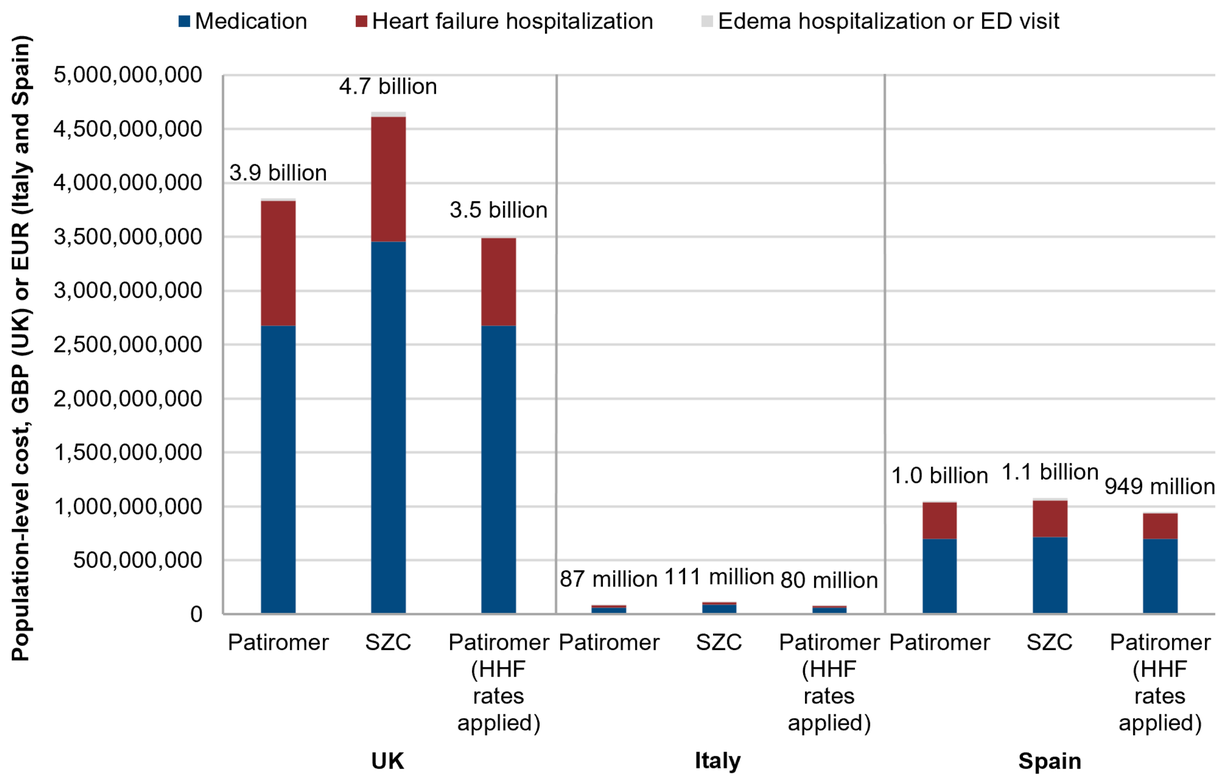
Figure 1. Patient-level results



ED, emergency department; EUR, 2022 euros; GBP, 2022 pounds sterling; HHF, hospitalization for heart failure; SZC, sodium zirconium cyclosilicate.

- Including the difference in heart failure hospitalization rates in a sensitivity analysis led to greater cost savings with patiromer over SZC, increasing to GBP 902, EUR 1,524 and EUR 460 in the UK, Italy and Spain, respectively (Figure 1).
- Extrapolation of patient-level outcomes to a population level found that patiromer was associated with annual cost savings of GBP 801.7 million in the UK, EUR 24.7 million in Italy and EUR 30.6 million in Spain versus SZC (Figure 2).
- Differences between country-specific results at a population-level were primarily driven by differences in the reported prevalence of hyperkalemia, with the highest prevalence reported for the UK and the lowest prevalence reported for Italy.
- Sensitivity analyses showed that the key drivers of outcomes were the inclusion of hospitalization for heart failure event rates and the dosing schedule of SZC, with patiromer associated with cost increases in the UK, Italy and Spain when lower SZC dosing schedules of 5 g per day or 5 g every other day were applied (compared with 10 g per day in the base case analysis).

Figure 2. Population-level results



ED, emergency department; EUR, 2022 euros; GBP, 2022 pounds sterling; HHF, hospitalization for heart failure; SZC, sodium zirconium cyclosilicate.

CONCLUSIONS

- Based on published estimates of dosing and severe edema rates, the present modeling analysis indicated that patiromer is likely to be associated with cost savings compared with SZC in the management of hyperkalemia in the UK, Italy and Spain.
- These data suggest that patiromer is likely to represent an appealing option for the management of hyperkalemia in terms of both clinical and economic outcomes, both for physicians and healthcare payers.

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