Cost comparison analysis of patiromer versus sodium zirconium cyclosilicate for the treatment of hyperkalemia in Saudi Arabia

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INTRODUCTION

- Hyperkalemia is a serious medical condition defined by elevated levels of serum potassium, with potential related complications including fatal cardiac arrhythmias, muscle weakness and paralysis.[1]
- The health and economic burden of hyperkalemia is difficult to quantify due to different clinical definitions, severity thresholds and patient populations reported by different studies, and potential underreporting of the condition in the general population, with prevalence typically only captured during hospital admissions for other conditions.
- In Saudi Arabia, hyperkalemia was reported in 50% of people with chronic kidney disease and 42% of people with chronic heart failure in 2023, with chronic kidney disease associated with more severe hyperkalemia (22% of people with chronic kidney disease versus 12% with chronic heart failure).[2]
- In a survey of 300 hospitalized adults in Saudi Arabia, the most frequently stated causes of hyperkalemia were identified as chronic kidney disease (94%), medications (87%), chronic heart failure (47%), and untreated diabetes (41%), with patients able to specify more than one cause in the survey.[2]
- Two modern treatment options for hyperkalemia, the potassium binders patiromer (Veltassa™) and sodium zirconium cyclosilicate (SZC, Lokelma™), have both demonstrated safety in a recent real-world study, with patiromer 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 Saudi Arabian setting.

METHODS

- Costs associated with patiromer and SZC (at both the patient- and population-level) were evaluated using a model developed in Microsoft Excel.
- The base case analysis evaluated only pharmacy costs, with dosing of patiromer and SZC based on World Health Organization defined daily doses (Table 1).

Table 1. Costs and dosing applied in the analysis

Medication	Acquisition cost per 30-sachet pack, SAR	Dose proportions
Patiromer 16.8 g	1,219.70	0%
Patiromer 8.4 g	1,219.70	100%
SZC 10 g	1,667.65	50%
SZC 5 g	1,166.05	50% (all once-daily)

SAR, 2023 Saudi Riyals; SZC, sodium zirconium cyclosilicate.

- Costs were accounted from a healthcare payer perspective in Saudi Arabia, capturing pharmacy costs and the cost of hospitalization for heart failure, and were expressed in 2023 Saudi Riyals (SAR), based on prices published by the Saudi Food and Drug Authority (Table 1).
- In a sensitivity analysis, a reduction in the risk of hospitalization for heart failure was applied in the patiromer arm versus SZC, with event rates of 25.1 and 35.8 events per 100 person-years applied, respectively, based on data from a real-world comparative study in non-dialysis-using adults who initiated patiromer or SZC between May 2018 and September 2020 in Optum's Clinformatics Data Mart Database (Table 2).[3]
- Country-specific data captured in a literature review were used to inform values for the total population (34 million people) and hyperkalemia prevalence (47.3%) of hospitalized adults in Saudi Arabia, which were used to extrapolate population-level results.[4]

Table 2. Clinical event rates

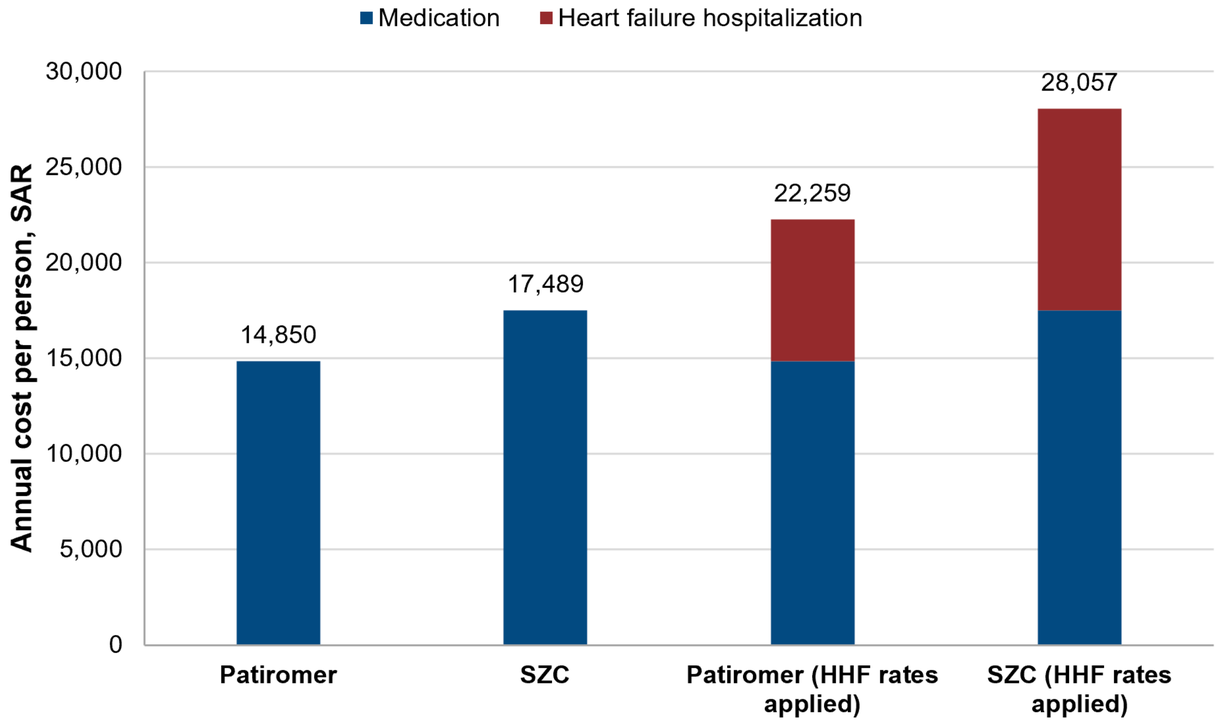
Event	Event rate, per 100 person-years		Hazard ratio with SZC versus patiromer (95% CIs)
	Patiromer (n=2,839)	SZC (n=1,126)	
Hospitalization for heart failure (any)†	25.1	35.8	1.22 (0.95–1.56)
Hospitalization for heart failure (primary)‡,§	9.4	12.2	1.15 (0.76–1.74)
Death§	7.2	9.3	1.16 (0.73–1.86)
Severe 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 due to lack of cost data in Saudi Arabia.

RESULTS

- Total costs with patiromer and SZC were estimated to be SAR 14,850 and SAR 17,489 per patient per year, respectively, with a cost saving of SAR 2,639 per patient per year driven by the lower daily cost of patiromer versus SZC (Figure 1).

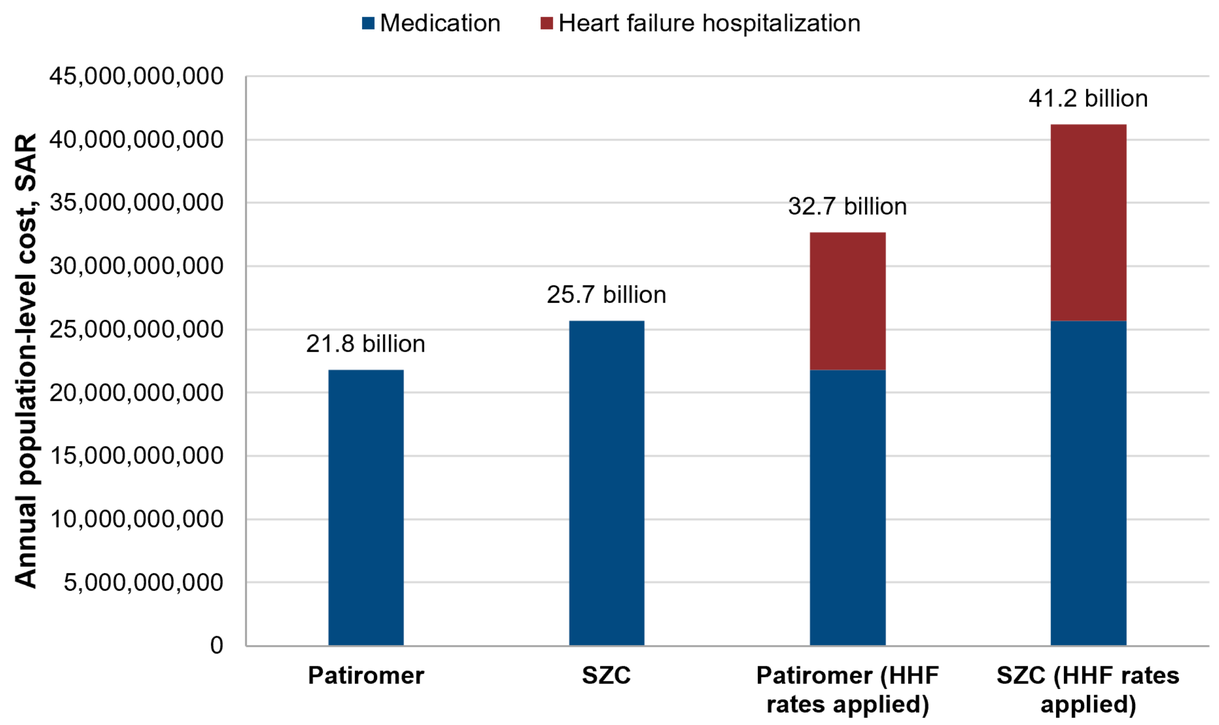
Figure 1. Patient-level results



HHF, hospitalization for heart failure; SAR, 2023 Saudi Riyals; SZC, sodium zirconium cyclosilicate.

- In the analysis with the hospitalization for heart failure event rates applied, total costs with patiromer and SZC were estimated to be SAR 22,259 and SAR 28,057 per person-year, respectively, for the treatment of hyperkalemia in Saudi Arabia (Figure 1).
- Patiromer was therefore associated with cost savings of SAR 5,798 per person-year of treatment versus SZC in Saudi Arabia in this analysis.
- At a population level, use of patiromer in place of SZC could result in annual cost savings of up to SAR 3.9 billion (Figure 2).
- Extrapolation to population-level results in this sensitivity analysis found that patiromer was associated with annual cost savings of SAR 8.5 billion versus SZC (Figure 2).
- Key drivers of outcomes were the inclusion of hospitalization for heart failure event rates and the dosing of SZC, with patiromer associated with cost increases when SZC dosing schedules of 5 g every day or every other day (versus the doses in Table 1) were applied.

Figure 2. Population-level results



HHF, hospitalization for heart failure; SAR, 2023 Saudi Riyals; SZC, sodium zirconium cyclosilicate.

CONCLUSIONS

- The present modeling analysis indicated that patiromer is likely to be associated with cost savings compared with SZC in the management of hyperkalemia in Saudi Arabia.
- These results should provide pertinent information for physicians and healthcare payers in the country when considering treatments for hyperkalemia.

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DISCLOSURES

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