

Cost Estimation of Published Heart Failure and Edema Events in Hyperkalemic Patients on Patiromer and Sodium Zirconium Cyclosilicate

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Background and objective

- Risk of real-world hospitalizations for heart failure (HHF), and edema hospitalizations or emergency department (ED) visits (edema events) for patiromer or sodium zirconium cyclosilicate (SZC) were previously directly compared by Zhuo et al.¹
- Of the 3965 propensity score matched patients included, 2839 were newly prescribed patiromer and 1126 were newly prescribed SZC, and baseline characteristics were well-balanced between the two groups.
 - Approximately 30% of patients had heart failure, 85% had chronic kidney disease stages 3–5, >70% had diabetes and ~60% used angiotensin-converting enzyme inhibitors or angiotensin receptor blockers at baseline.
- Statistical significance favoring patiromer vs SZC was achieved with:¹
 - The secondary endpoint of severe edema events: hazard ratio (95% confidence interval [CI]) 1.89 (1.05–3.30).
 - The subgroup analyses of any HHF events in patients who did not have heart failure (HF) prior to index HHF event: HR (95% CI) 1.58 (1.01–2.46).
- Consistent numerical differences were shown across the endpoints favoring patiromer vs SZC.
 - Primary endpoint: any HHF (HF discharge diagnosis in any position), HR (95% CI) 1.22 (0.95–1.56)
 - Secondary endpoints: primary HHF (HF discharge diagnosis in primary position), HR (95% CI) 1.15 (0.76–1.74) and all-cause mortality, HR (95% CI) 1.16 (0.73–1.86).
- These numeric differences warrant further investigation as they may have economic and/or clinical importance.

Methods

- We designed a model to estimate economic offsets that combined the following model inputs:
 - Patiromer and SZC HHF and edema event rates/100 person-years from Zhuo et al (**Table 1A**),¹
 - Mean costs derived from Optum’s de-identified Clinformatics® Data Mart (CDM) database (the database also used by Zhuo et al) for HHF, edema events (including hospitalization and ED), and 30-count potassium binder prescription (**Table 1B**).
- CDM data spanned 2019–2021, and costs were adjusted to 2021 US dollars.

Table 1: Model inputs

A. Event rates ¹				
Event rate/100 person-years	Patiromer (N=2839)	SZC (N=1126)	Difference	95% CI
Any HHF	25.1	35.8	10.7	2.6; 18.8
Edema*	3.4	7.1	3.6	1.7; 7.1

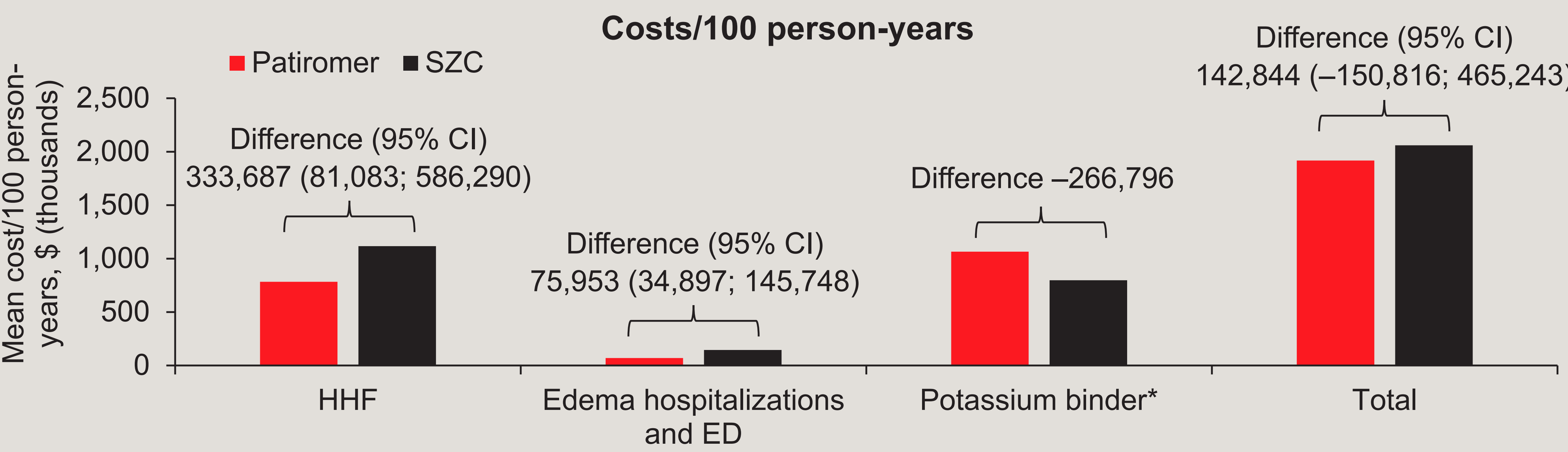
B. Mean event costs [†]					
Events	N	Mean cost, \$	Prescription fills (30 count)	N	Mean cost, \$
HHF	2,095,607	31,186	Patiromer	34,578	887.44
Edema hospitalizations	514,859	37,651	SZC	13,181	665.11
Edema ED visits	441,342	552			

*54% hospitalizations and 46% ED visits; †Optum CDM data 2019–2021.
\$, US dollars adjusted for 2021; CI, confidence interval; ED, emergency department; HHF, hospitalization for heart failure; SZC, sodium zirconium cyclosilicate.

Results

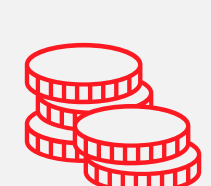
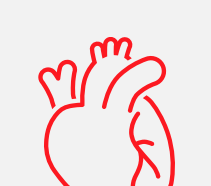

- For this base case, patiromer was associated with a mean savings estimate of \$142,844/100 person-years (**Figure 1**).
- Mean costs/100 person-years totaled \$1,917,483 for patiromer vs \$2,060,327 for SZC, comprising:
 - \$852,555 vs \$1,262,195 (difference \$409,640) for HHF and edema events.
 - \$1,064,928 vs \$798,132 (difference –\$266,796) for potassium binders.

Figure 1: Model outputs



*Potassium binder cost calculated based on prescription claims data.
\$, US dollars adjusted for 2021; CI, confidence interval; ED, emergency department; HHF, hospitalization for heart failure; SZC, sodium zirconium cyclosilicate.

Conclusions

-  The difference between the cost of patiromer and SZC was offset by the difference in and subsequent cost of hospitalization events; however, the differences in hospitalization rates were small.
-  Model outcomes were most affected by HHF cost and least influenced by edema ED visit cost.
-  Limitation: CDM data extract may differ from that used by Zhuo et al.¹

REFERENCES: 1. Zhuo M, et al. *J Card Fail* 2022;28:1414–23.
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