# Clinical outcomes associated with sodium zirconium cyclosilicate (SZC) for treating hyperkalaemia in patients receiving haemodialysis

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## This study aimed to evaluate the projected impact of SZC on clinical outcomes over a lifetime horizon in patients receiving haemodialysis in Italy

Extrapolating modelled outcomes to a national level demonstrates the potential of SZC to **reduce hospitalisations and prolong life expectancy**, resulting in more patients able to **receive kidney transplant**

SZC was predicted to **reduce cardiovascular deaths by 13%** compared with placebo based on data from DIALIZE and DOPPS-Italy

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## Introduction

- The Dialysis Outcomes and Practice Patterns Study (DOPPS) demonstrated that a high proportion of Italian patients on maintenance haemodialysis have elevated peak serum potassium ($sK^+$)[1]
- This elevated $sK^+$ is associated with an increased risk of adverse outcomes, including all-cause and cardiovascular (CV) death and hospitalisation[1]
- In the DIALIZE (NCT03303521) trial, sodium zirconium cyclosilicate (SZC) significantly increased the proportion of patients with end-stage kidney disease (ESKD) who maintained predialysis $sK^+$ 4.0–5.0 mmol/L versus placebo on background of standard of care[2]

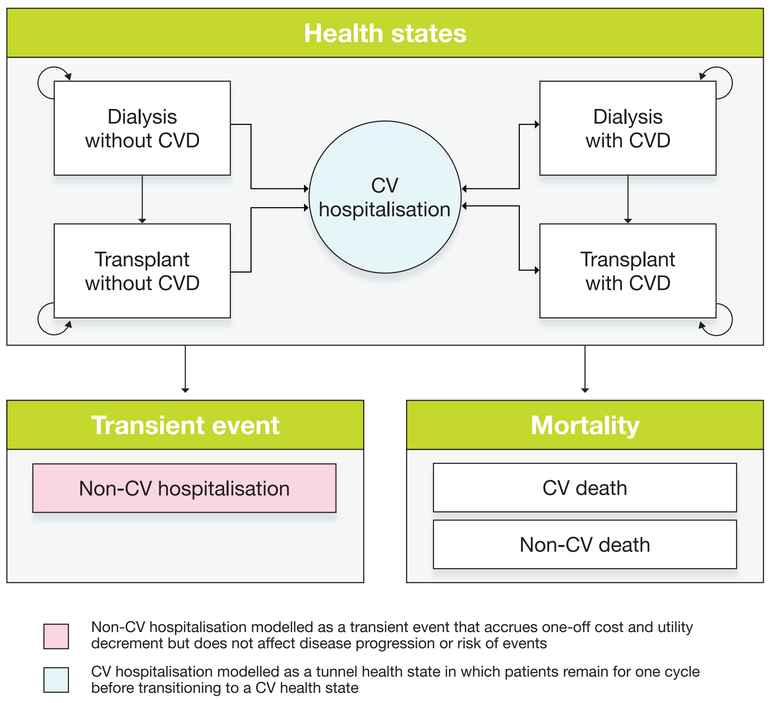
## Objective

To assess the projected impact of SZC versus placebo on clinical outcomes, including kidney transplants and CV events, in individuals undergoing haemodialysis in Italy.

## Methods

- A semi-Markov state transition model was used to quantify the predicted clinical outcomes associated with SZC treatment in patients on haemodialysis (Figure 1)

**Figure 1.** Semi-Markov model structure



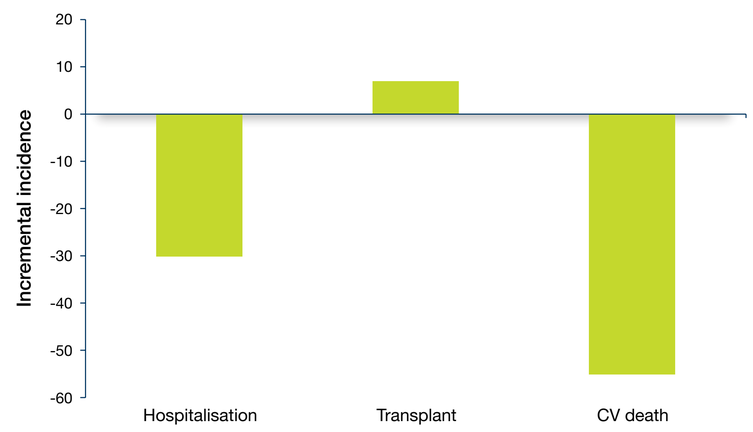

CV, cardiovascular; CVD, cardiovascular disease

- Population characteristics and $sK^+$-dependent risks of hospitalisation and death were informed by DOPPS-Italy data,[1] while transplant rates were informed by an Italian registry study[3]
- Treatment efficacy was derived by sampling $sK^+$ trajectories from DIALIZE SZC and placebo arms to predict peak $sK^+$ across a four-month period[2]
- Outcomes were predicted over a lifetime horizon

## Results

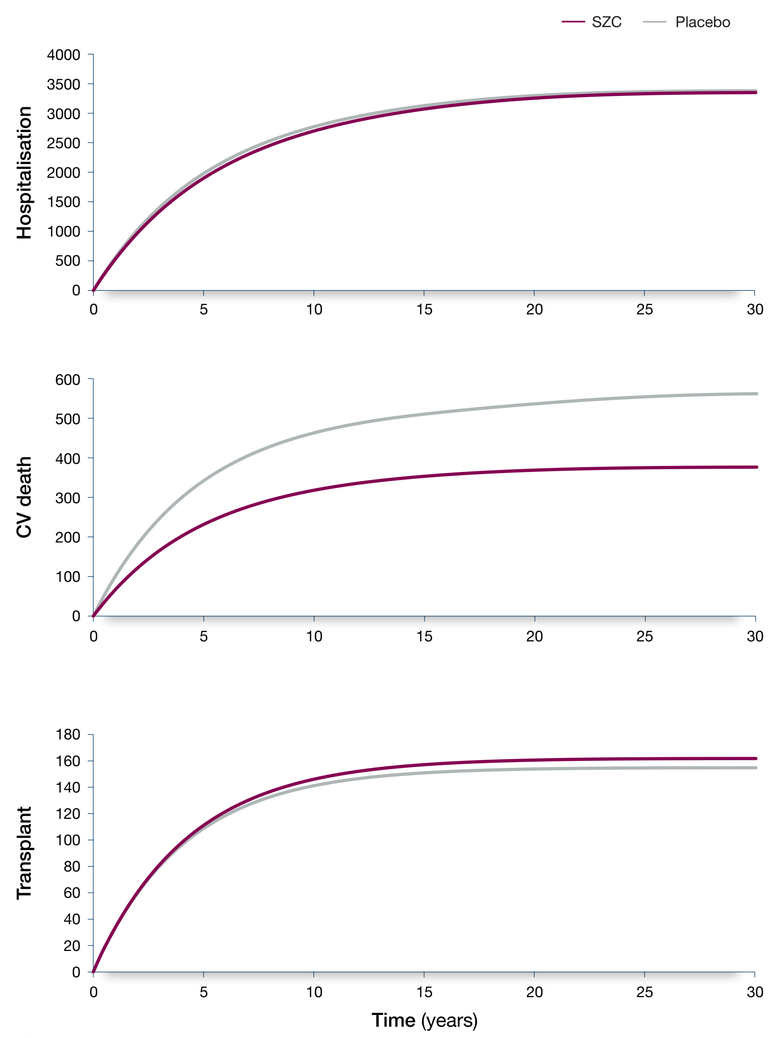
- SZC treatment was estimated to reduce overall hospitalisations by 30.2 per 1,000 patients and CV deaths by 55.1 per 1,000 patients over the modelled time horizon compared with placebo (Figure 2)
- The incremental increase in life years (LYs) of 0.289 led to 6.9 more kidney transplants per 1,000 patients associated with SZC treatment compared with placebo over the modelled time horizon

**Figure 2.** Cumulative incremental incidence
Incremental events presented per 1,000 patients over a lifetime horizon




CV, cardiovascular

**Figure 3.** Cumulative incidence of clinical outcomes
Total events presented per 1,000 patients




CV, cardiovascular

## National-level analysis

When extrapolated to the national level in Italy,[3] **SZC was predicted to result in...**

**1,277** fewer hospitalisations

**2,335** fewer CV deaths

The incremental increase in LYs means **SZC has the potential to enable...**

**293** additional kidney transplants

...to patients on haemodialysis in Italy, driven by **improved outcomes**

## Limitations

- The model assumed a constant baseline $sK^+$ distribution, therefore did not account for potential long-term effects of SZC on controlling $sK^+$ levels, which may underestimate the benefits of SZC
- The same hospitalisation risks were assumed for patients receiving haemodialysis and those who had undergone transplant. This may lead to an underestimation of the overall benefits of SZC, as the potential reduction in hospitalisations due to the increased number of transplants facilitated by SZC was not captured

## Conclusions

- Management of hyperkalaemia with SZC in patients with ESKD receiving haemodialysis has potential benefits including **fewer hospitalisations and CV deaths**
- This treatment may enhance survival, enabling more patients to **benefit from kidney transplantation** and experience subsequent improvements in quality of life
- Implementing SZC nationally in Italy could potentially alleviate disease burden and optimise healthcare resource utilisation, **enhancing healthcare capacity**
- These findings underscore the importance of considering **SZC as a standard intervention for managing hyperkalaemia** in patients on haemodialysis

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**Disclosures**

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