Impact of SGLT2-inhihitor uptake in CKD Management in Denmark - A Decision Economic Model

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BACKGROUND

Chronic kidney disease (CKD) poses an increasing global burden for patients and healthcare providers driven aging populations and rising prevalence of chronic diseases. Despite strong evidence supporting benefits of sodium-glucose co-transporter 2-inhibitors (SGLT2i), uptake remains limited. This study models potential benefits of increased SGLT2i uptake on clinical and economic outcomes of CKD in Denmark.

Fig 1. Predicted number of eligible CKD patients

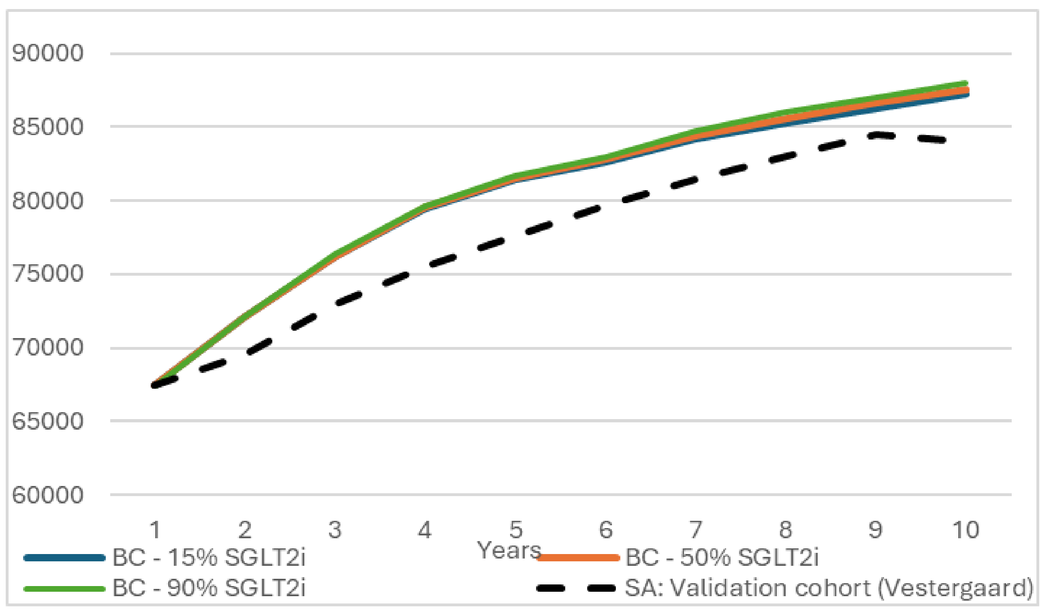


Fig 2. Predicted number of patient in haemodialysis

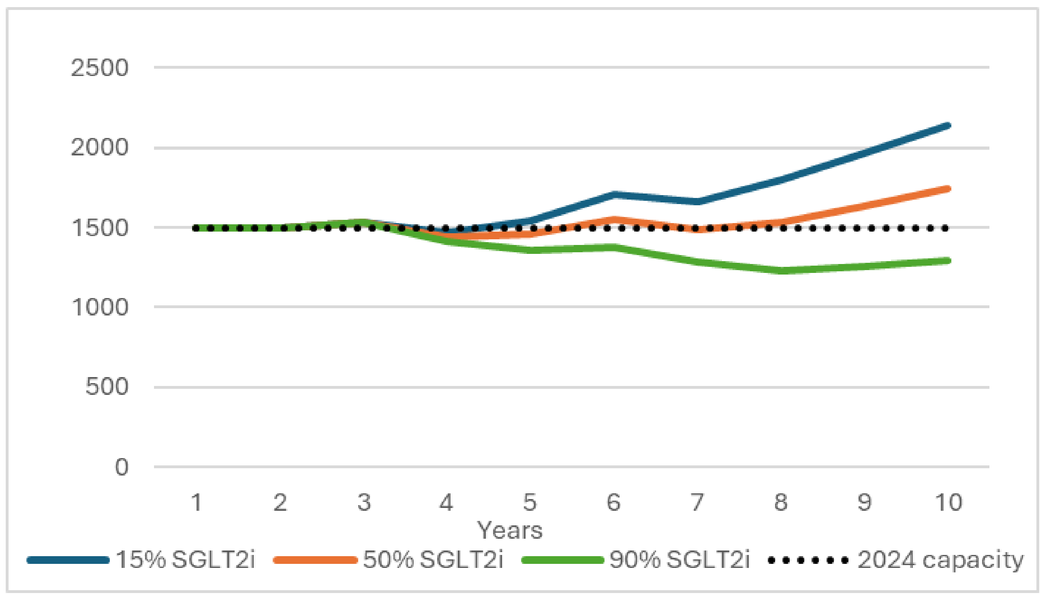
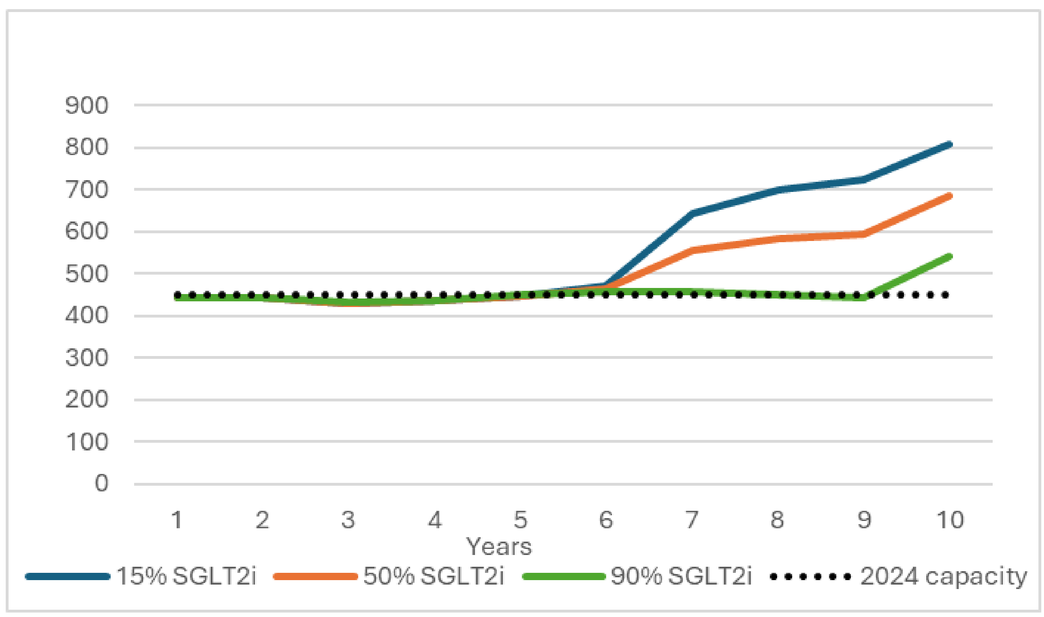


Fig 3. Predicted number of patient in peritoneal dialysis



METHODS

Incident and prevalent CKD populations eligible for SGLT2i were simulated using a validated CKD progression model[1] to assess attributable 10-year effects of SGLT2i treatment associated with uptake rates of 15%, 50%, and 90%. SGLT2i treatment effects were estimated based on outcomes in the EMPA-KIDNEY trial. Based on population estimates for CKD G3-G5, the model evaluated benefit on all-cause mortality, quality-adjusted life years, cardiovascular disease, and kidney failure (KF). The broader healthcare impact was estimated through costs and net monetary benefit. Model predictions were validated against Danish RWE data[2].

RESULTS

Based on prevalence and incidence of CKD, the model predicts a 30% increase in the population of CKD G3-G5 from 251,946 in 2026 to 328,414 in 2035 of which 26% are eligible for SGLT2i (Fig 1). SGLT2i uptake of 15%, 50%, 90% are associated with a 10-year risks of KF of 8.5%, 6.6%, and 4.5% respectively (Fig 2-3) and 10-year mortality rate of 54.3%, 53.9% and 53.5%. This results in a net monetary benefit of 204 and 438 million €, respectively, compared to uptake of 15%. The model shows accumulated health sector cost savings after 5-6 years (Fig 4).

Fig 4. Costs (100% SGLT2i cost)

CONCLUSION

Based on a validated CKD progression model, increased SGLT2i uptake in Denmark is associated with increased patient survival and reduced progression to KF leading to a net benefit on health care spending within a six-year time horizon. Consequently, our results highlight potential value of a broader uptake of SGLT2i for management of a growing population of patients with CKD in Denmark.

References:

[1]Ramos et al., Development and validation of a chronic kidney disease progression model using patient-level simulations, Renal failure (2024)

[2]Vestergaard et al., Identification of Patients with CKD in Medical Databases, CJASN (2021)