INTRODUCTION

- Heart failure is the most common reason for hospitalisation among patients older than 65 years in Sweden[1].
- Considering a prevalence of 2%, approximately 200,000 HF patients are affected with HF in Sweden [3] with an estimated annual direct costs of 2.2-6.6 billion SEK.
- Adherence to standard of care treatment with ACE inhibitors (ACEi) and beta blockers (BB) is high (>80%), but nonetheless readmission rate within 30 days after first hospitalization remains high (19.5%) and the prognosis of hospitalized patients is poor [3].
- Sacubitril/valsartan (Entresto®) is an inhibitor of the angiotensin II receptor and nephrilysin (ARNi) that improved outcomes in patients with reduced ejection fraction (HFpEF). PARADIGM-HF (a large, phase III, multicentre, randomised controlled trial) demonstrated that treatment with sacubitril/valsartan significantly reduced the composite primary outcome of cardiovascular (CV) death or HF hospitalisation compared with the ACE inhibitor enalapril (hazard ratio [HR] 0.80; p< 0.01) as well as CV death (HR 0.86; p=0.001) [4].

OBJECTIVE

To evaluate the cost-effectiveness of sacubitril/valsartan (Entresto®), a novel angiotensin-receptor nephrilysin inhibitor (ARNi), compared to enalapril in heart failure patients with reduced ejection fraction (HFpEF) from a Swedish health care perspective.

METHODS

- A regression based cost-effectiveness analysis of sacubitril/valsartan compared to ACEi was developed based on PARADIGM-HF data (Figure 1).
- Regression analyses were used to predict events and outcomes as functions of treatment arm, baseline characteristics and time from randomization.
- Cardiovascular mortality was modelled using parametric survival curves (Gompertz distribution) derived from PARADIGM-HF data with non-CV mortality captured using Swedish life tables.
- All-cause hospitalization rates were estimated using a negative binomial regression model.
- Utilities were calculated based on a mixed model linking EQ-SD estimates to hospitalizations, adverse events, time from randomisation and treatment arm.
- Adverse event rates were derived from PARADIGM-HF results, and assumed to be constant.
- Patient characteristics from the PARADIGM-HF population were re-weighted based on data from the Swedish Heart Failure Registry (SWED-HEFT) (Table 2).
- Swedish unit costs for treatment, monitoring, hospitalization and adverse events are summarised in Table 1.
- The model was run from a societal perspective and adopted a life-time health horizon.

RESULTS

- In the base case, sacubitril/valsartan was associated with an ICER of 224,885 SEK (24,044 EUR**), Table 3.
- Sacubitril/valsartan was associated with a longer life expectancy of around 10 months and a QALY gain of 0.48 compared to enalapril.
- When adjusting average therapy costs were higher with sacubitril/valsartan compared with an ACEi (163,977 SEK or 1,743 vs. 0,115 EUR**), non-therapy costs were lower (36,750 vs 40,076 SEK or 3,929 vs 4,284 EUR**).

CONCLUSIONS AND DISCUSSION

- Our analysis suggests that sacubitril/valsartan is cost-effective vs ACE inhibitors, the current standard of care, at conventional willingness-to-pay thresholds in Sweden (<500,000 SEK), in a population of individuals with HFrEF and in New York Heart Association (NYHA) functional classes II–IV.
- Results shown to be robust throughout all sensitivity analyses. However, our analysis had one important limitation, which was that treatment effect had to be extrapolated beyond the clinical trial and the relative effect of sacubitril/valsartan on mortality was assumed to be maintained for the modeling period. This limitation was assessed in and the cost-effectiveness acceptability curve (CEAC) in Figure 2) the probabilities of sacubitril/valsartan being cost-effective at the lifetime time horizon at thresholds of 300,000 SEK and 500,000 SEK (32,000 and 52,000 USD) were 95% and 99%, respectively.

REFERENCES


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