

COST-EFFECTIVENESS ANALYSIS OF SUNITINIB VS INTERFERON-ALFA FOR FIRST-LINE TREATMENT OF ADVANCED AND/OR METASTATIC RENAL CELL CARCINOMA IN SINGAPORE

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INTRODUCTION

The Agency for Care Effectiveness (ACE) was established in August 2015 as the national health technology assessment (HTA) agency in Singapore to guide health policy, drive appropriate use of treatments and inform technology subsidy decisions.

OBJECTIVE

To evaluate the cost-effectiveness of sunitinib compared to interferon alfa for the first-line treatment of advanced and/or metastatic renal cell carcinoma (RCC) in Singapore.

METHOD

- A partitioned survival model with three health states (progression-free, progressive disease and death) was developed from a healthcare payer perspective (Fig 1).
- Survival curves from the sunitinib pivotal trial¹ (sunitinib vs interferon alfa) were extrapolated beyond the trial period to estimate the underlying progression-free survival and overall survival parametric distributions.
- Health state utilities were derived from the literature and direct costs were sourced from public healthcare institutions in Singapore. A discount rate of 3% was applied to both costs and outcomes. Incremental cost-effectiveness ratios (ICERs) were calculated over a 10 year time horizon in the base case.
- The sunitinib dose used in the model reflected local prescribing practices whereby a combination of 50mg (28%) and 37.5mg (72%) strengths are used.

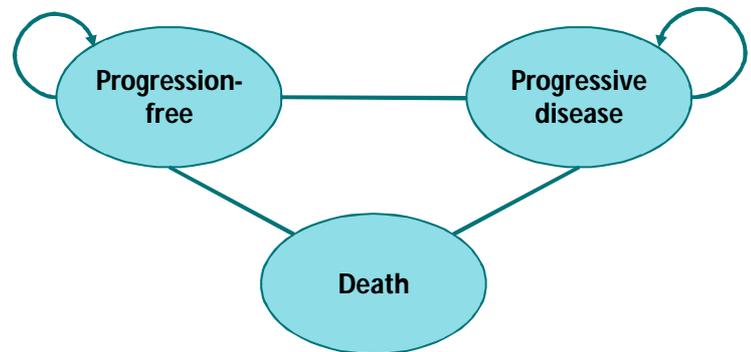


Figure 1. Partitioned survival model with three health states

- All patients were assumed to enter the model in the progression-free health state and receive either sunitinib or interferon alfa up to disease progression.
- One-way deterministic (OWSA) and probabilistic sensitivity analyses (PSA) were conducted to explore uncertainties.

RESULTS

- The base-case analysis comparing sunitinib versus interferon alfa resulted in an ICER of SG\$191,000 per quality-adjusted life year (QALY) gained.
- The ICER was most sensitive to the utility weights for the progression-free health state (sunitinib arm), and hazard ratios for overall survival; however, when parameters were varied in deterministic sensitivity analyses, none of the ICERs fell within a range which would be deemed cost-effective in the local setting (Fig 2).
- The PSA results were congruent with the base-case analysis.

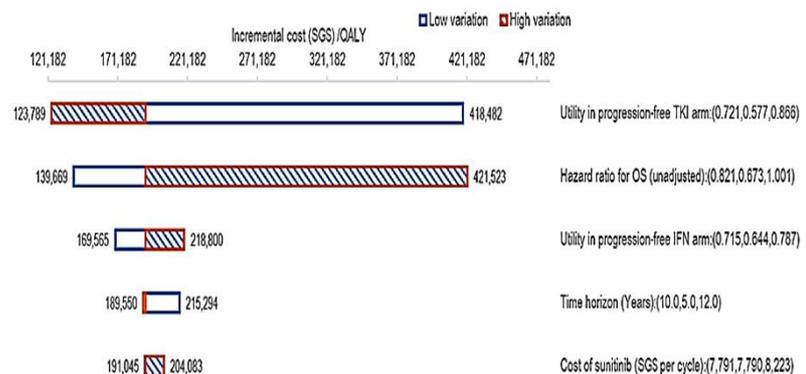


Figure 2: OWSA tornado diagram for sunitinib versus interferon-alfa

CONCLUSION

- While sunitinib is clinically more effective than interferon alfa in prolonging progression free survival in RCC, it is also considerably more costly in Singapore's context. Consequently, when compared with interferon alfa, it is unlikely to represent a cost-effective use of healthcare resources at the current price.
- Our findings will be useful to inform local healthcare decision-making and resource allocations for sunitinib when appraised alongside comparative clinical effectiveness data, safety profiles and payer affordability considerations.

1. Motzer RJ et al. Sunitinib versus interferon alfa in metastatic renal-cell carcinoma. *N Engl J Med.* 2007;356:115-124; Motzer RJ et al. Overall survival and updated results for sunitinib compared with interferon alfa in patients with metastatic renal cell carcinoma. *J Clin Oncol.* 2009;27:3584-3590