INTRODUCTION

- Cancer of the kidney comprises 2–3% of all malignant adult tumors.
- Renal cell carcinoma (RCC) is the most common type of kidney cancer, accounting for approximately 85% of the cases.
- Cancers of the kidney comprise 2–3% of all malignant adult tumors.

METHODS

- The original model used TARGET data from May 2005.
- Recently the latest overall survival data from the TARGET study were presented at ASCO 2007. The results of this study showed a benefit in overall survival compared to placebo (HR 0.60), whereas the final OS results were confirmed due to inclusion of RCC patients to sorafenib. A post-hoc secondary analysis comparing placebo data demonstrated significant survival advantage for sorafenib (HR 0.58).

OBJECTIVE

- The September 2006 overall survival (OS) data of sorafenib were used to obtain the probability of death after progression.
- The September 2006 survival data were used for the OS probabilities of sorafenib at the end of each cycle.
- The OS probability for the sorafenib treatment arm was projected from the survival function built from patient level data after sorafenib distribution fitted to OS survival. The survival function was assumed to be trend-free previous OS probabilities.

Figure 1. Markov model of the natural history of patients with advanced renal cell carcinoma.

CLINICAL INPUTS

- For example, patients who are progression free in the current cycle are: in the next cycle;
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DISCUSSION

- Results from the supplementary analysis may reflect the benefit of sorafenib observed from the trial more accurately.
- The September 2006 overall survival data of sorafenib were used to obtain the probability of death after progression.
- The September 2006 survival data were used for the OS probabilities of sorafenib at the end of each cycle.
- The OS probability for the sorafenib treatment arm was projected from the survival function built from patient level data after sorafenib distribution fitted to OS survival. The survival function was assumed to be trend-free previous OS probabilities.

CONCLUSIONS

- The September 2006 overall survival (OS) data of sorafenib were used to obtain the probability of death after progression.
- The September 2006 survival data were used for the OS probabilities of sorafenib at the end of each cycle.
- The OS probability for the sorafenib treatment arm was projected from the survival function built from patient level data after sorafenib distribution fitted to OS survival. The survival function was assumed to be trend-free previous OS probabilities.
- The Markov process does change the state of patients in the death state.

Table 1. Probabilities of Death after Progression for Sorafenib – the first 3 years

<table>
<thead>
<tr>
<th>Month</th>
<th>Death 1</th>
<th>Death 2</th>
<th>Death 3</th>
<th>Death 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>1</td>
<td>0.997</td>
<td>0.003</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>0.994</td>
<td>0.006</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>0.991</td>
<td>0.009</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Table 2. Survival of Sorafenib vs. BSC over a lifetime horizon

<table>
<thead>
<tr>
<th>Survival Year</th>
<th>Sorafenib</th>
<th>BSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0.500</td>
<td>0.500</td>
</tr>
<tr>
<td>20</td>
<td>0.333</td>
<td>0.333</td>
</tr>
<tr>
<td>30</td>
<td>0.250</td>
<td>0.250</td>
</tr>
<tr>
<td>40</td>
<td>0.200</td>
<td>0.200</td>
</tr>
<tr>
<td>50</td>
<td>0.167</td>
<td>0.167</td>
</tr>
</tbody>
</table>

Table 3. Economic Evaluation of Sorafenib versus Best Supportive Care in Advanced Renal Cell Carcinoma

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Costs</th>
<th>Effectiveness</th>
<th>ICER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sorafenib + BSC</td>
<td>$86,034</td>
<td>3.000</td>
<td>$36,634</td>
</tr>
<tr>
<td>BSC only</td>
<td>$59,800</td>
<td>2.500</td>
<td>$36,634</td>
</tr>
</tbody>
</table>

ECONOMIC INPUTS

- Liver metastasis in RCC requires surgery (e.g., nephrectomy or partial nephrectomy) or BSC alone.
- The lifetime per patient costs were $92,222 and $36,634 for sorafenib+BSC and BSC alone, respectively.
- The incremental cost-effectiveness ratio (ICER) of sorafenib+BSC versus BSC alone was $63,219 per LYG.
- The sensitivity analyses showing that 95% of ICER results of 1,000 simulation runs were less than $95,000 per LYG attests to the robustness of the model.
- The results from these analyses using the most updated OS data from TARGET study (Sep 2006) are consistent with an earlier economic model showing sorafenib is cost-effective compared to BSC in advanced RCC.