Introduction

• Patients with Li-Fraumeni Syndrome (LFS) are at a high risk of cancer
• Lifetime risk of cancer approaches 90%
• Recent data suggest that early cancer surveillance is beneficial for patients with LFS

Objective

• Assess the cost-effectiveness of an early cancer surveillance strategy versus no surveillance for patients with LFS

Results

• Model predicted that 12%, 57%, 21% and 10% of patients had 0, 1, 2, or 3+ tumors
• This closely mirrors the tumor frequency for LFS patients
• Surveillance had an incremental cost of $70,606 and 4.12 LY gained as compared to no surveillance (Table 1)
  • ICER of $17,125

Table 1. Base-case scenario costs, mean LY, and ICER of surveillance strategies over a lifetime

<table>
<thead>
<tr>
<th>Surveillance Strategy</th>
<th>Mean Cost</th>
<th>Mean LY</th>
<th>Incr. Cost</th>
<th>Incr. LY</th>
<th>ICER</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Surveillance</td>
<td>$46,496</td>
<td>-</td>
<td>23.05</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Surveillance</td>
<td>$117,103</td>
<td>$70,606</td>
<td>27.17</td>
<td>4.12</td>
<td>$17,125</td>
</tr>
</tbody>
</table>

• OWSA found that the probability of tumor development had the largest impact on the results (Figure 2)
• Surveillance remained cost-effective in all cases at our WTP threshold

• PSA showed that surveillance had a 98% probability of being cost-effective at our WTP threshold (Figure 3)

Methods

• Model design
  • A Markov decision analytic model
• Perspective
  • US Third-Party Payer
• Cycle Length and Time horizon
  • 1 year cycles repeated over a lifetime
• Health states
  • No cancer, cancer, post-cancer survivorship, and dead (Figure 1)
• Model inputs
  • Obtained from national estimates and published literature
• Model outcomes
  • Costs (2015 USD), life years (LY) gained, and incremental cost-effective ratios (ICERs)
• Willingness to pay (WTP)
  • 100,000 USD/LY
• Discount
  • 3% annually
• Sensitivity Analyses
  • One-way sensitivity analyses (OWSA)
  • Probabilistic sensitivity analysis

Figure 1. Health states of Markov model

Conclusions

• Early cancer surveillance of individuals diagnosed with LFS is cost-effective at our WTP threshold
• Additional analyses using real-world data from large national or international LFS-based databases are needed

Future Directions

• Estimate costs and healthcare utilization for LFS patients
• Determine the effect of early cancer surveillance on quality of life for LFS patients
• Assess the cost-effectiveness of early cancer surveillance for LFS patients from a societal perspective