BACKGROUND AND OBJECTIVE

- Obstructive sleep apnoea (OSA) is a sleep breathing disorder characterised by repetitive collapse of the upper airway during sleep resulting in nocturnal hypoxemia and recurrent arousals.1
- Continue positive airway pressure (CPAP) is the first line of therapy for moderate to severe OSA.2 However, CPAP is not tolerated by some patients, adherence is highly variable with reports of adherence between 39% to 60%.1
- Closed loop Upper airway stimulation (UAS) is the intended second line therapy for these patients. This study aimed to assess the cost-effectiveness and budget impact of closed loop UAS therapy versus conservative medical management from the Australian healthcare system perspective.

RESULTS

COST UTILITY ANALYSIS

- Closed loop UAS system was associated with an incremental QALY gain of 2.07, at an incremental cost of AU$67,769 compared to conservative medical management.
- Closed loop UAS system is likely to be cost-effective with an ICER of AU$32,814/QALY gained, which is below the typically accepted cost-effectiveness thresholds (range: AU$45,000-AU$75,000) recommended by the Australian authorities10.
- One-way sensitivity analysis (OWSA) showed that CE results were robust and most sensitive to mortality HRS, the regression equation used to transform ESS scores to EQ-SD utilities and battery life of UAS system (Figure 2).

Table 4: Results of Cost-Utility Analysis

<table>
<thead>
<tr>
<th>UAS System</th>
<th>Total Costs</th>
<th>Total QALYs</th>
<th>Δ Costs</th>
<th>Δ QALYs</th>
<th>ICER ($/QALY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed loop UAS</td>
<td>AUS$68,713</td>
<td>11.83</td>
<td>-</td>
<td>-</td>
<td>AU$32,814</td>
</tr>
<tr>
<td>Conservative medical management</td>
<td>AUS$944</td>
<td>9.77</td>
<td>2.07</td>
<td>2.07</td>
<td>-</td>
</tr>
</tbody>
</table>

Figure 2: One-way Sensitivity Analysis Results

BUDGET IMPACT ANALYSIS

- It is expected that 24 patients will likely use closed loop UAS in Year 1 which will increase to 150 patients in Year 5 in the base case analysis.
- The estimated incremental budget impact due to introduction of closed loop UAS to the Australian healthcare system ranges from AU$1,04 million in Year 1 to AU$6,51 million in Year 5 (Figure 3).

Figure 3: Total Costs for Implementation of Closed loop UAS over 5 years

CONCLUSIONS

- Closed loop UAS system is a cost-effective therapy compared to conservative medical management for patients with moderate to severe OSA.
- Model results were robust to varying parameters in one-way sensitivity analysis.
- The introduction of closed loop UAS system is expected to have a modest impact on the budget of the Australian health care system.

FINANCIAL DISCLOSURES

The authors of this study received consulting fees from Inspire Medical Systems, Inc.

REFERENCES