INTRODUCTION

- With the increasing prevalence of type 2 diabetes mellitus (T2DM) in Taiwan, cost-effective treatment options are needed, and Dulaglutide, a once-weekly glucagon-like peptide-1 receptor agonist, has been developed as a treatment for the Taiwan population.

- The AWARD (Assessment of Weekly Administration of Dulaglutide in Diabetes) clinical trial program assessed the efficacy of dulaglutide against comparators including insulin glargine, metformin, sitagliptin, and liraglutide.

- In the AWARD-6 trial, once-weekly dulaglutide 1.5 mg showed non-inferiority to once-daily liraglutide 1.8 mg.

- Present results suggest that dulaglutide and liraglutide (the comparator) is the most effective and the least costly treatment for T2DM in Taiwan.

OBJECTIVE

- To estimate the cost-effectiveness of dulaglutide 1.5 mg and 0.75 mg and liraglutide 1.2 mg as a treatment for patients with T2DM in Taiwan initiating injectable therapy after failing oral antihyperglycemic medication.

METHODS

Cost-Effectiveness Analyses

- The analyses were conducted using the IMS CORE Diabetes Model, version 8.5, a validated computer simulation model that project health and economic outcomes for patients with T2DM treated with dulaglutide and liraglutide.

- Dulaglutide and liraglutide efficacy data were derived from the AWARD-6 and AWARD-2 clinical trials and a network meta-analysis (NMA).

- Model inputs included the derivation of incremental cost-effectiveness ratios (ICERs) per quality-adjusted life year (QALY) for each comparator.

- Baseline characteristics (age, duration of diabetes, baseline metabolic risk factors, and cardiovascular complications) were based on baseline demographics and characteristics of patients recruited to the AWARD-6 and AWARD-2 clinical trials.

- These characteristics were similar to those reported in the Taiwanese Diabetes Health Promotions Institute cohort study and considered generalizable to all eligible Taiwanese T2DM population.

- Non-carotid vascular complication rates were based on estimates derived from the United Kingdom National Institute for Health and Care Excellence clinical guideline 87 and background risk factors estimated from local data.

Table 1: AWARD-6 and AWARD-2 Baseline Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>AWARD-6</th>
<th>AWARD-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>59.0 (4.9)</td>
<td>59.1 (5.6)</td>
</tr>
<tr>
<td>Duration of diabetes (years)</td>
<td>7.2 (5.4)</td>
<td>9.1 (6.5)</td>
</tr>
<tr>
<td>Male, %</td>
<td>43</td>
<td>51</td>
</tr>
<tr>
<td>Body mass index (kg/m²)</td>
<td>33.6 (5.1)</td>
<td>31.6 (5.5)</td>
</tr>
</tbody>
</table>

♦ Unless otherwise indicated, data are mean (standard deviation)

Comparisons

- The specific treatment effect comparisons were:
  - Dulaglutide 1.5 mg vs liraglutide 1.8 mg
  - Dulaglutide 1.5 mg vs liraglutide 1.2 mg
  - Dulaglutide 0.75 mg vs liraglutide 1.2 mg

Dulaglutide Treatment Effects

- Mean treatment effects for glycosylated hemoglobin (HbA1c) were applied to nausea event rates for dulaglutide 0.75 mg and 1.5 mg, respectively.
- In each case, mean event rates derived in the Dulaglutide 1.5 mg arm were increased by 1.2 and 1.2 mg mean event rates.

Table 2: Treatment Effects

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Dulaglutide 1.5 mg</th>
<th>Dulaglutide 1.5 mg</th>
</tr>
</thead>
</table>
| Event rate per 100 patient-years | Relative treatment effects for nausea event rates for dulaglutide 0.75 mg and 1.5 mg, respectively, in each case mean event rates derived in the Dulaglutide 1.5 mg arm increased by 1.2 and 1.2 mg mean event rates.

Base Case Assumptions

- Under base case assumptions:
  - Dulaglutide 1.5 mg was dominant (less costly and more effective) compared with liraglutide 1.8 mg (Table 3).
  - Dulaglutide 1.5 mg and 0.75 mg were also cost effective compared with liraglutide 1.2 mg (Table 5)

Table 3: Base Case Assumptions

<table>
<thead>
<tr>
<th>Model Parameter</th>
<th>Assumption</th>
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</thead>
<tbody>
<tr>
<td>Perspective</td>
<td>Taiwanese payer</td>
</tr>
<tr>
<td>Treatment effects</td>
<td>Based on an NMA of available data</td>
</tr>
<tr>
<td>Cohort assumptions</td>
<td>Based on the ITT population of the AWARD-1 and AWARD-2 trials</td>
</tr>
</tbody>
</table>

Table 4: Annual Treatment and Management Costs

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Total Annual Cost (2015 NTD)</th>
<th>Dulaglutide 1.5 mg vs Liraglutide 1.8 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dulaglutide 1.5 mg</td>
<td>51,970</td>
<td>81,821</td>
</tr>
<tr>
<td>Dulaglutide 0.75 mg</td>
<td>51,970</td>
<td>-</td>
</tr>
<tr>
<td>Liraglutide 1.8 mg</td>
<td>66,492</td>
<td>-</td>
</tr>
<tr>
<td>Liraglutide 1.2 mg</td>
<td>44,558</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 5: Base Case Results

- Dulaglutide 1.5 mg was dominant (less costly and more effective) compared with liraglutide 1.8 mg (Table 3).
- Dulaglutide 1.5 mg and 0.75 mg were also cost effective compared with liraglutide 1.2 mg (Table 5).

One-Way Sensitivity Analyses and Probabilistic Sensitivity Analyses

- The results of the OWAIS and PSA were consistent with the base case results over a range of plausible input values.

CONCLUSIONS

- Under current price assumptions, the model found that:
  - Dulaglutide 1.5 mg dominated liraglutide 1.8 mg (less costly, more effective).
  - Dulaglutide 1.5 mg and 0.75 mg were cost effective relative to liraglutide 1.2 mg.

- The results were robust to plausible variations in input values.

- These results suggest that the introduction of once-weekly dulaglutide in patients for T2DM starting injectable therapy would be a cost-effective treatment option for the Taiwanese public health system.

Acknowledgements:

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