A comparative health economic evaluation of the SQ standardised grass allergy immunotherapy tablet and subcutaneous immunotherapy in the treatment of grass pollen induced allergic rhinoconjunctivitis

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Background

Allergic rhinoconjunctivitis (ARC) constitutes a large burden for society. The disease prevalence is increasing and approximately 20-25% of the European population suffers from respiratory allergies including ARC. The majority of patients are treated with symptomatic pharmacotherapy; however a large proportion remain uncontrolled despite the use of such treatments. Specific immunotherapy (SIT) is the only treatment documented to target the underlying allergic disease and activate immunomodulatory mechanisms leading to a sustained effect after completion of treatment. Based on a Danish societal and health care perspective, this analysis shows the economic consequences if adult patients with grass pollen induced ARC uncontrolled on symptomatic medications are treated with a grass allergy immunotherapy tablet (AIT) instead of the currently established clinical practice of subcutaneous immunotherapy (SCIT).

Method

A cost-minimisation analysis (CMA) was performed comparing the SQ-standardised grass AIT (Grazax, Phleum pratense, 75,000 SQ-T/2,800 BAU, ALK, Denmark) with SCIT (Alutard, Phleum pratense, 100,000 SQ-U, ALK, Denmark) (Figure 1). The choice of CMA was based on a review publication and a meta-analysis, which concluded that the clinical effect of AIT is similar in magnitude to that observed for SCIT in grass pollen induced ARC patients with similar disease severity. Health care utilisation was measured in physical units based on national guidelines, literature reviews and expert opinion. The valuation in unit costs was based on drug tariffs, physician fee structures and wage statistics in 2010. Key model assumptions can be found in Table 1.

Results

Treating ARC patients with grass AIT instead of SCIT is cost-saving due to a significantly reduced number of physician visits needed, leading to a reduction in direct treatment costs, direct patient costs and indirect costs (Table 2 and Figure 2).

Table 1: Key model assumptions used for the CMA

<table>
<thead>
<tr>
<th>Model assumptions</th>
<th>Grazax</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment length</td>
<td>3 years</td>
<td>5 years</td>
</tr>
<tr>
<td>Compliance</td>
<td>80%</td>
<td>90%</td>
</tr>
</tbody>
</table>

Figure 1: Treatment sequences for the two products compared in the CMA

![Figure 1](image-url)

- **Grazax (Grass AIT)**: 250 tablets in the 1st year, 250 tablets in the 2nd year, 250 tablets in the 3rd year, 1 maintenance vial every year
- **SCIT**: 1 titration kit, 2 maintenance vials every year

A sensitivity analysis confirmed the robustness of the results in Table 2 and Figure 2.

Table 2: Costs (in €) in relation to treatment with Grass AIT and SCIT

<table>
<thead>
<tr>
<th>Cost category</th>
<th>Grass AIT</th>
<th>SCIT</th>
<th>Direct patient costs</th>
<th>Indirect costs</th>
<th>Total costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication</td>
<td>284</td>
<td>1765</td>
<td>1777</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician cost</td>
<td>312</td>
<td>1394</td>
<td>2582</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct treatment costs</td>
<td>1354</td>
<td>4665</td>
<td>2150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct treatment costs + patient costs</td>
<td>2386</td>
<td>4831</td>
<td>7143</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct patient productivity</td>
<td>704</td>
<td>1089</td>
<td>704</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total costs</td>
<td>3084</td>
<td>7420</td>
<td>5061</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2: Direct treatment and patient costs, indirect costs and total costs (in €) in relation to treatment with Grass AIT and SCIT

![Figure 2](image-url)

- **SCIT**: ↓ 30%
- **Grass AIT**: ↓ 48%

Conclusion

In patients with grass pollen induced ARC, this cost-minimisation analysis shows that treatment with the SQ-standardised grass AIT reduces both direct and in-direct treatment costs compared with SCIT. Thus, the SQ-standardised grass AIT is a cost-saving alternative to SCIT both from a societal and health care perspective.