**Budget Impact of Apremilast for Moderate to Severe Plaque Psoriasis in the UK**

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**BACKGROUND**

- Plaque psoriasis is a chronic, systemic, immune-mediated inflammatory disease affecting between 1.3–2.2% of the general population in the UK.
- Patients with severe plaque psoriasis suffer from a number of comorbidities including joint disease (which can occur in up to 30% of patients), metabolic syndrome, depression, and cardiovascular morbidity, and can result in a significant economic burden on the National Health Service (NHS).
- Apremilast (Otezla®) is an orally administered, small-molecule phosphodiesterase-4 inhibitor.
- Apremilast was approved by the European Medicines Agency in 2015 for the treatment of moderate to severe chronic plaque psoriasis in adult patients who failed to respond to or have a contraindication to, or are intolerant to other systemic therapies including cyclosporine, methotrexate, or psoralsen and ultraviolet A light (PUVA).
- The objective of this analysis was to assess the budget impact of introducing apremilast in the current treatment portfolio for severe psoriasis from the UK payer perspective.

**METHODS**

**Model Structure**

- A 5-year budget impact model was developed using a prevalence-based approach (Figure 1).
- The analysis was conducted from the perspective of the NHS in the UK.

**Figure 1. Model Design**

- **Adult population (5+)**
- **Prevalence of psoriasis**
- **Prevalence of severe psoriasis**
- **Market share in the world without apremilast**
- **Market share in the world with apremilast**
- **Drug acquisition costs**
- **Drug administration costs**
- **Drug monitoring costs**
- **Total costs**
- **Budget impact (cost difference)**

**Patient Population**

- The target population was estimated based on the total UK population, annual population growth rate, prevalence of psoriasis, and proportion of patients with severe disease (i.e. those with a total Psoriasis Area Severity Index (PASI) >10 and a Dermatology Life Quality Index (DLQI) >10).
- The UK adult population size in 2015 and the annual growth rate over the next 5 years was obtained from the Office for National Statistics.¹⁴
- The prevalence of severe psoriasis was assumed constant over 5 years.

**Table 1. Patient Population Input Values**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult population in 2015</td>
<td>51,339,161</td>
<td>Office for National Statistics 2015¹⁴</td>
</tr>
<tr>
<td>Yearly population growth rate</td>
<td>0.7%</td>
<td>Office for National Statistics 2016¹⁴</td>
</tr>
<tr>
<td>Prevalence of severe psoriasis</td>
<td>1.83%</td>
<td>Gelfand et al. 2008²⁴</td>
</tr>
<tr>
<td>Proportion of severe patients</td>
<td>5.3%</td>
<td>Kurd et al. 2009²⁴</td>
</tr>
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**Table of Treatment Options and Uptake of Apremilast**

- The psoriasis population was divided into 3 categories: untreated patients, patients receiving >1 conventional systemic therapy, and patients on biologics.
- For cost and market share calculation purposes, the conventional systemic therapies were divided into treatment options, including: methotrexate, cyclosporine, and others.
- Biologic therapies included adalimumab, etanercept, infliximab, secukinumab, ustekinumab, biosimilar etanercept, and biosimilar infliximab.
- In the reference scenario (i.e., “world without apremilast”), market shares were assumed to be constant over time.
- As apremilast is licensed in patients who have failed or are intolerant or contraindicated to conventional systemic therapies, in the “world with apremilast”, it was assumed that the uptake of apremilast would take market share from those patients who would otherwise be eligible for biologic therapies.
- Therefore, a proportion of patients who would have received biologics were assumed to be treated with apremilast in the “world with” scenario.
- The model assumed an equal displacement of each biologic therapy, i.e., the shares taken by apremilast were divided among the biologic agents equally.

**RESULTS**

- Over a 5-year period, the number of patients treated with apremilast was estimated to increase from 20 to 590.
- The annual overall cost savings was estimated to increase from £87,509 in 2016 to £1,943,736 in 2020 (Table 3).
- The introduction of apremilast was estimated to decrease the total 5-year budget by 2.16% (£219,203,607 vs. £224,097,749) relative to the world without.
- In 2020, drug acquisition costs were estimated to decrease by 4.43% (£38,961,708 vs. £38,676,181), administration costs by 18.67% (£200,012 vs. £245,916), and monitoring costs by 2.81% (£6,341,553 vs. £6,524,911), yielding a net cost savings of 2.48% (£43,503,272 vs. £45,447,008).

**CONCLUSIONS**

- Apremilast is expected to displace a proportion of biologic therapeutics, offering an oral alternative option for patients who have failed or are intolerant or contraindicated to conventional systemic therapies.
- The oral self-administration of apremilast is associated with a reduction of the use cost for drug administration compared with biologic therapeutics and a reduction of user cost for monitoring compared with biologic therapy.
- Inclusion of apremilast for the treatment of moderate to severe plaque psoriasis in the UK is cost-saving in all respects.

**REFERENCES**


**ACKNOWLEDGEMENTS**

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