Cost-effectiveness of reduced viral transmission with baloxavir antiviral treatment for seasonal and pandemic influenza in the United Kingdom

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The modeled reduction in viral transmission from baloxavir treatment resulted in greater population benefits vs oseltamivir or no treatment in the UK

We developed a cost-effectiveness model of baloxavir vs oseltamivir or no treatment in the UK with inputs informed by a novel Susceptible, Exposed, Infected, Recovered (SEIR) model

Infection rates were lower with baloxavir vs oseltamivir or no treatment across populations and settings

Relatively small reductions in viral transmission can have a meaningful impact on health economic outcomes

RESULTS

SEIR model results

• For the high-risk population in the seasonal setting, infection rates were highest among untreated patients (26.2%) followed by those treated with oseltamivir (24.8%) and baloxavir (22.0%)
• The relative reduction in infections was –26.3% with baloxavir vs oseltamivir and –11.1% with baloxavir vs oseltamivir

Table 1. Base Case Cost-Effectiveness Results per 10,000 People

<table>
<thead>
<tr>
<th>Total population</th>
<th>Inpatient ICU</th>
<th>High-risk population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baloxavir vs oseltamivir</td>
<td>28,850</td>
<td>14,259</td>
</tr>
<tr>
<td>Baloxavir vs no treatment</td>
<td>10,050</td>
<td>40,392</td>
</tr>
</tbody>
</table>

Figure 1. Relative Reductions in Infections With Baloxavir

-10% -5% 0% 5% 10% 15% 20% 25%

Infections (%)

No treatment High-risk Population High-risk Population Baloxavir vs no treatment Baloxavir vs oseltamivir

Cost-effectiveness results

• For the total population in the seasonal setting, the predicted reductions in infections with baloxavir ranged from an ICER of £1,926/QALY gained with baloxavir vs oseltamivir to £4,000/QALY gained with baloxavir vs no treatment (Table 1)
• ICERs with baloxavir were higher in pandemic vs seasonal settings and in the HR vs the total population in the seasonal and high-treatment pandemic settings (Table 1)
• The incremental net monetary benefit of baloxavir vs oseltamivir increased as the relative reduction in infections (transmission) among baloxavir-treated patients increased (Figure 2)

Figure 2. Net Monetary Benefit of Baloxavir by Relative Reduction in Infections With Baloxavir vs Comparator

Table 2. Cost-Effectiveness Results: Health System Capacity in Pandemic Settings

<table>
<thead>
<tr>
<th>Pandemic</th>
<th>Total population (12+ years old)</th>
<th>Baloxavir vs oseltamivir</th>
<th>Baloxavir vs no treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient ICU</td>
<td>11,402</td>
<td>21,650</td>
<td>30,000</td>
</tr>
<tr>
<td>High-risk population</td>
<td>41,360</td>
<td>82,720</td>
<td>123,000</td>
</tr>
</tbody>
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Sensitivity analyses

• In the analysis exploring the impact of antiviral-treated patients having ‘true’ influenza, baloxavir was dominant when 100% had true influenza in the seasonal setting and resulted in £2,848/QALY gained in the high-treatment pandemic setting and £2,498/QALY in each setting, respectively, when only 25% had true influenza

Scenario analysis: health system capacity in pandemic settings

• Baloxavir was cost-effective across all pandemic treatment (seasonal and high-treatment pandemic) settings (higher care-seeking and treatment rates) settings (Table 2)

Table 3. Cost-Effectiveness Results: Health System Capacity in Pandemic Settings

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DISCLOSURES

GRL has received fees and stock ownership from Hoffmann-La Roche Ltd. CS is an employee of the Office of Health Economics (OHE), which has received funding from a variety of pharmaceutical companies.

REFERENCES


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