Introduction and Purpose

- Invasive mould diseases (IMDs) – severe infections caused by Aspergillus and other filamentous fungi, such as mucormycosis – are life-threatening infections in patients with underlying immune suppression. Antifungal treatment must be started early to prevent complications.
- The current treatment strategy is typically based on an initial period of intravenous (IV) antifungal therapy followed by oral antifungal therapy (POSA) to reduce costs.
- Despite the clinical efficacy of isavuconazole, a number of challenges need to be considered.

Methods

- **Base case**: The incremental cost of IMI treatment was estimated by using the UK’s NHS reference cost for Elective and Non-elective hospital bed days for both elective and non-elective IMI treatment.
- **Scenario analyses**: The following scenarios were tested:
  - **Complete oral therapy**: 100% of ISAV patients were initiated on oral therapy, and all ISAV patients were moved to oral therapy in line with the base case.
  - **Complete IV therapy**: 100% of ISAV patients were initiated on IV therapy, moved to oral therapy in line with the base case.
  - **Alternative scenario**: All ISAV patients were initiated on IV therapy, and moved to oral therapy in line with the base case.

Key Assumptions

- No differences in clinical outcomes between treatment arms.
- Treatment regimens are clinical studies (VITAL, SECURE, etc.)
- **POSA**: £596.96 per 24-pack of 100 mg tablets.
- **IV**: £18.08 per IV administration for L-AMB and £6.03 for ISAV.
- **IV drug costs** were estimated at £2.702 per 15 days for L-AMB, £2.702 per 15 days for ISAV.
- **Oral Drug**: £0 per 15 days.
- **Total cost of oral drug therapy** was £0.
- **Total cost of IV drug therapy** was £0.059.

Results

- **Base case**: The total incremental cost of IMI treatment was estimated at £11,206 per patient.
- **Scenario analyses**: The following scenarios were tested:
  - **Complete oral therapy**: 100% of ISAV patients were initiated on oral therapy, and all ISAV patients were moved to oral therapy in line with the base case.
  - **Complete IV therapy**: 100% of ISAV patients were initiated on IV therapy, moved to oral therapy in line with the base case.
  - **Alternative scenario**: All ISAV patients were initiated on IV therapy, and moved to oral therapy in line with the base case.

Conclusions

- **This study**: Treatment of IMI with isavuconazole in the UK would be associated with costs savings relative to liposomal amphotericin B (L-AMB) followed by prophylactic administration of a wider range of antimicrobial agents. Future studies to evaluate the cost implications of the IV to oral transition and the impact of subsequent oral therapy on IMI treatment outcomes are required.

References

- Monitoring and administration costs were estimated at £21.50 per day for ISAV and £19.70 per day for POSA.
- The total incremental cost of IMI treatment was estimated at £11,206 per patient.
- **Scenario analyses**: The following scenarios were tested:
  - **Complete oral therapy**: 100% of ISAV patients were initiated on oral therapy, and all ISAV patients were moved to oral therapy in line with the base case.
  - **Complete IV therapy**: 100% of ISAV patients were initiated on IV therapy, moved to oral therapy in line with the base case.
  - **Alternative scenario**: All ISAV patients were initiated on IV therapy, and moved to oral therapy in line with the base case.

Table 1: Base case per-patient cost of invasive mould disease treatment

<table>
<thead>
<tr>
<th>Cost category</th>
<th>ISAV treatment</th>
<th>L-AMB treatment</th>
<th>L-AMB – POSA</th>
<th>L-AMB – POSA (€ change)</th>
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<tbody>
<tr>
<td>Daily drug costs</td>
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<td>£21.50</td>
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<td>£0</td>
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<td>Oral drug costs</td>
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<td>Total cost</td>
<td>£21.50</td>
<td>£21.50</td>
<td>£0</td>
<td>£0</td>
</tr>
</tbody>
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