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The cost of treating invasive mould disease caused by *Aspergillus* and other filamentous fungi with isavuconazole compared with liposomal amphotericin B followed by posaconazole in the United Kingdom

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Background: Invasive mould diseases (IMDs) – caused by *Aspergillus* species and other filamentous fungi – typically affect immunocompromised individuals and can be associated with high mortality. Isavuconazole (ISAV) is the most recently approved treatment option for IMD in Europe and the United States. Alternative treatment options with activity against both *Aspergillus* and Mucorales species include intravenous (IV) liposomal amphotericin B (L-AMB) followed by oral posaconazole (POSA). A cost-minimisation model was developed to explore the cost impact of treating IMD patients with ISAV versus L-AMB followed by POSA in the United Kingdom (UK).

Material/methods: A cost-minimisation approach was taken, with per-patient treatment costs for IMD estimated from the perspective of the UK healthcare system. The time horizon was until end of treatment. Treatment-related costs comprised on-treatment drug acquisition, monitoring and administration costs, and hospitalisation costs. Clinical inputs, including treatment durations and dosing regimens, were derived for ISAV from the phase 3 SECURE and VITAL studies and for L-AMB from two studies assessing L-AMB in the treatment of invasive fungal infections (Leenders *et al.* 1998 and Cornely *et al.* 2007). The total treatment duration was assumed to be equivalent to that observed in the SECURE study. Monitoring requirements were based on adverse events and precautions

reported in the Summary of Product Characteristics. Unit costs were from publicly available UK sources.

Results: The estimated per-patient cost of treating IMD was £15,497 with ISAV versus £19,261 with L-AMB + POSA (Table 1). Savings were primarily driven by reduced drug acquisition costs with ISAV relative to L-AMB + POSA, alongside lower monitoring and administration costs.

Conclusions: ISAV is expected to reduce IMD treatment costs by 20% compared with L-AMB + POSA in the UK.

Table 1: Results of base-case cost-minimisation analysis

Cost source	ISAV		L-AMB + POSA		[L-AMB + POSA]- [ISAV]
	Resource use	Cost (£)	Resource use	Cost (£)	Savings (£) (% saving)
IV drug	8.1 days*	2,703	14.5 days**	7,271	4,569 (63)
Oral drug	39.0 days*	3,598	32.6 days	2,507	-1,091 (-43)
Total drug	47.1 days	6,301	47.1 days	9,779	3,478 (36)
Hospitalisation	19.0 days	9,076	19.0 days	9,076	0 (0)
Monitoring and administration	8 tests [†] , IV drug preparation [‡]	120	29 tests [†] , IV drug preparation [‡]	406	286 (70)
Total		15,497		19,261	3,764 (20)

*Patients initiated on oral therapy received 0.0 days IV and 47.1 days oral therapy (25% of ISAV patients were assumed to be initiated on oral therapy, based on VITAL study)

**Based on Leenders *et al.* 1998

[†]ISAV patients underwent 7.0 liver-function tests plus one instance of therapeutic drug monitoring; L-AMB + POSA patients underwent 2.0 instances of therapeutic drug monitoring, 6.0 magnesium tests, plus 7.0 of each of the following: urinalysis, serum creatinine tests and liver-function tests

[‡]Drug preparation time based on expert opinion