PMS551

Cost-Effectiveness of Tofacitinib-Containing Sequences for Rheumatoid Arthritis Patients in Spain

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BACKGROUND

- Current available therapies for rheumatoid arthritis (RA) treatment include conventional disease-modifying antirheumatic drugs (typically methotrexate [MTX]), biological agents (usually tumor-necrosis-factor [TNF] inhibitors) and Janus kinase (JAK) inhibitors.[1]
- Tofacitinib, is an oral JAK inhibitor, approved for patients with moderate to severe RA which are intolerant or with inadequate response to MTX.[2]

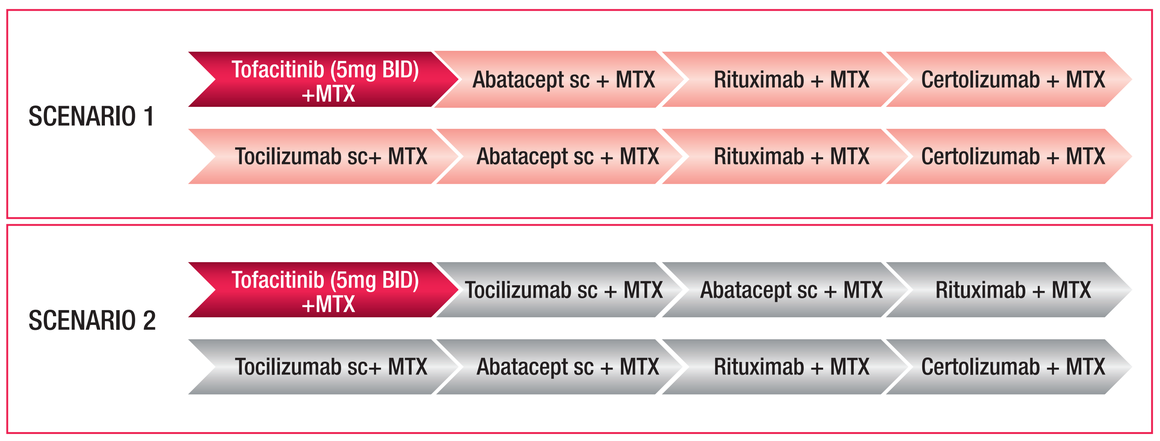
OBJECTIVE

To determine the cost-effectiveness of initiating tofacitinib treatment in patients with moderate to severe RA showing an inadequate response (IR) to MTX and a 2nd line therapy with any anti-TNF (TNF-IR population), in comparison to alternative treatment sequences excluding tofacitinib.

METHODS

- A patient-level microsimulation model was used to estimate the lifetime costs and quality-adjusted life-years (QALY) associated to different sequences of therapies initiating with tofacitinib (5mg BID) followed by biological therapies to be compared with sequences of biological treatments only (excluding initial tofacitinib).[3]
- Concomitant treatment with MTX was considered along all the therapies included in the treatment sequences.
- The sequences were defined by a panel of experts, according the clinical practice in Spain. (Figure 1)

Figure 1. Treatment sequences



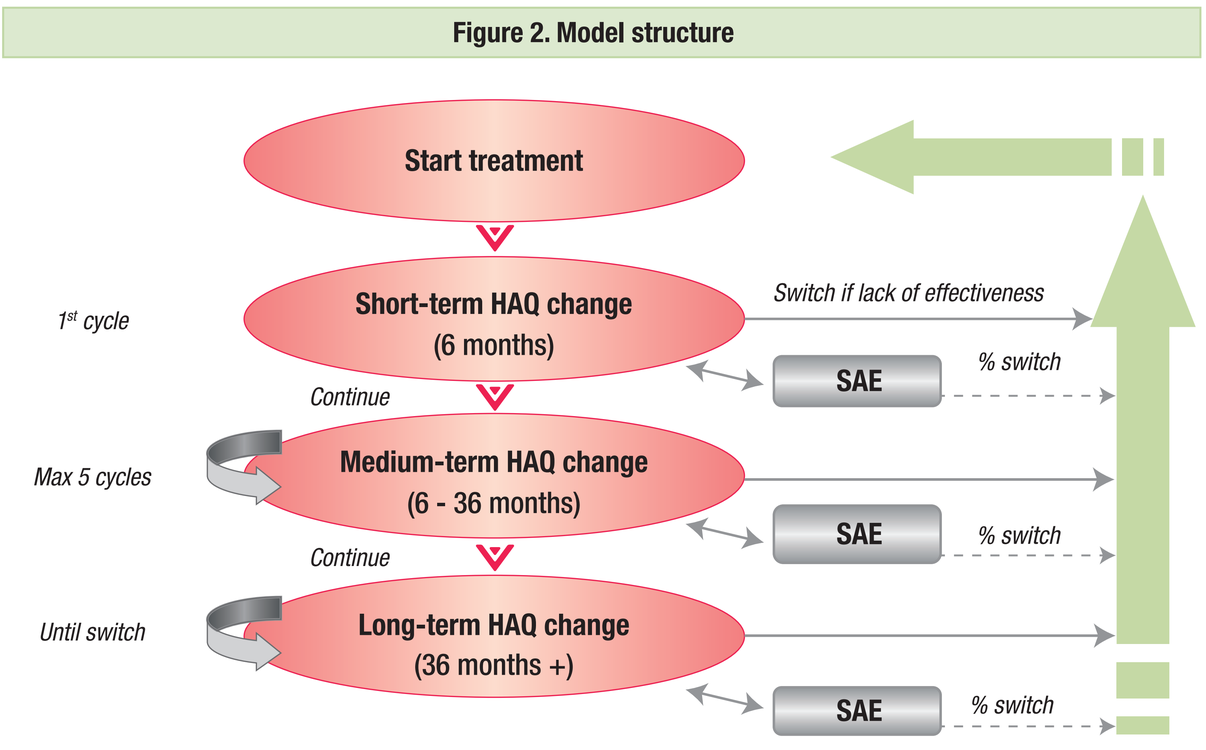
BID: twice daily; MTX: Methotrexate; sc: subcutaneous

- Profile of each individual patient of the total cohort assessed was defined based on characteristics of RA patients in a national registry[4,5], to assign age, weight, duration of RA and starting Health Assessment Questionnaire-disability Index (HAQ) value. (Table 1)
- HAQ score was chosen as surrogate of disease progression[6].
- HAQ score change for each 6-month cycle reflected the efficacy of therapies which were established for 3 intervals: short-term (initial 6-month period), medium-term (6-36 months) and long-term (>36 months from treatment initiation). (Figure 2)
- Source for efficacy inputs were mixed-treatment comparison (for first 6 months)[7] and long-term extension trials (for later periods).

Table 1. Baseline patients characteristics

Parameter	Value
Initial HAQ score	1.45[5]
Age: mean (SD)	51.0 (14.2)[4]
Gender (% males)	34.9%[4]
Mean weight (kg)	72.02 (>45 years)[8]
RA duration at beginning of simulation (years)	10.6 [95%CI: 5.7-17.6][4]

Figure 2. Model structure



METHODS

- Health-related quality of life was directly associated with patient HAQ score. Utilities were derived by mapping HAQ to EQ-5D and HUI-3 scores obtained from Spanish patient data-set[9].
- Occurrence of related serious adverse events (SAE) (represented as serious infections) was applied in each cycle, with the consequent decrement (0.157 for a 4-weeks period)[10] of the utility.
- Total cost (€, 2018) estimation included:
  - Acquisition cost which were calculated based on public ex-factory prices[11] with mandatory deduction applied or reference price. (Table 2)
  - Administration cost associated to parenteral drugs: €252.42 (hospital day required for intravenous infusion) and €27.10 (for education related to subcutaneous drugs).
- Disease progression[12] and SAE management (€5,871.08)[13].
- A 3% annual discount rate was applied to costs and outcomes[14].

Table 2. Pharmaceutical costs

Drug- concentration per unit	Number of administrations per 6-month period		Unitary cost (ex factory Price)[11]	Drug cost per 6-month cycle (in combination with MTX)
	Initial 6-month period	Subsecuent 6-month period		
Abatacept- 125mg	26	26	€194.42	€5,055.06
Certolizumab- 200 mg	13	13	€438.45	€5,699.99
Rituximab- 100 mg	1.33	1.33	€1,049.35	€1,399.27
Tocilizumab- 162 mg	26	26	€225.98	€5,875,62
Tofacitinib- 5 mg	365	365	€13.61	€4,968,05
Methotrexate- 2.5mg	26	26	€0.05	—

RESULTS

- In scenario 1, initial treatment with tofactinib+MTX provided greater efficacy (0.16 additional QALY) than the sequence only with biological drugs. The tofacitinib-containing sequence resulted in lower total cost (-€34,475) compared the comparator sequence, being a dominant option. (Table 3)
- In scenario 2, the tofacitinib-containing sequence resulted less efective (-0.06 incremental QALY) but remained a cost-saving option versus the alternative sequence (-€31,158 incremental cost). (Table 3)

Table 3. Base case results for lifetime horizon

	Scenario 1			Scenario 2		
	Tofacitinib-containing sequence	Comparator sequence	Incremental vs comparator sequence	Tofacitinib-containing sequence	Comparator sequence	Incremental vs comparator sequence
QALY	**14.191**	**14.035**	**0.155**	**13.994**	**14.052**	**-0.058**
Total cost	**€242,341**	**€279,816**	**€-37,475**	**€249,194**	**€280,351**	**€-31,158**
Drug acquisition	€180,912	€189,197	€-8,285	€176,897	€189,528	€-12,631
Administration	€31,787	€57,503	€-25,715	€41,360	€57,548	€-16,187
Disease progression	€26,727	€27,721	€-994	€28,269	€27,844	€426
SAE management	€2,914	€5,396	€-2,482	€2,668	€5,433	€-2,765
ICER	Tofacitinib-containing sequence dominates			Tofacitinib-containing sequence less effective, and less costly		

ICER: Incremental cost-effectiveness ratio; QALY: quality-adjusted life year; SAE: serious adverse event

- Probabilistic sensitivity analysis were also performed, showing that for scenario 1 almost 79% of 100,000 simulations have an ICER below a hypothetical willingness-to-pay threshold of €20,000/QALY gained[15].

CONCLUSION

Positioning tofacitinib as initial <u>second-line therapy</u> followed by other biologicals, resulted a cost-saving strategy compared to the continuation of treatment with biologicals only, in moderate to severe RA, TNF-IR patients, in Spain.

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Conflict of interest: This study was sponsored by Pfizer (Spain). Medical writing support was provided by PORIB and was funded by Pfizer. F de Anfrés-Nogales, MA Casado and I Oyagüez were paid as consultants by Pfizer in connection with the development of this economic model. C Peral, M Montoro, M Valderrama and S Gómez are employees of Pfizer. The other authors declare no conflicts of interest.

21st Annual European Congress International Society for Pharmacoeconomics & Outcomes Research

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Presented at ISPOR Europe 2018
10-14 November 2018 | Barcelona, Spain

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