

The Relative Value of Dasatinib versus Imatinib as First-line Treatment for Chronic Myeloid Leukemia

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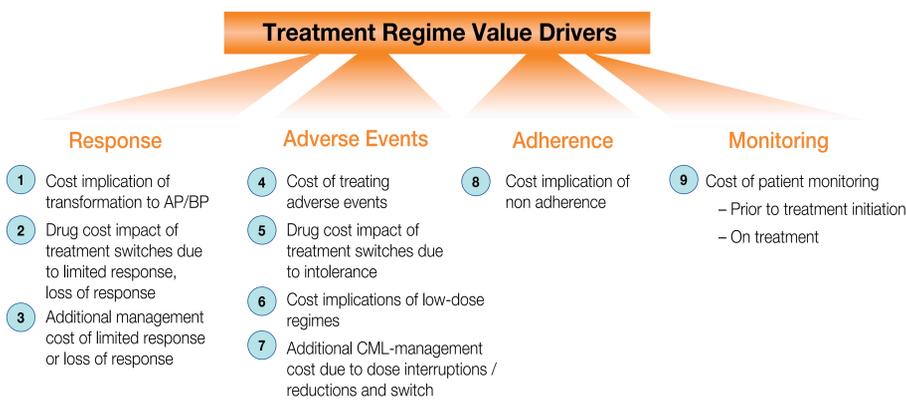
Objective

A relative value analysis (RVA) of 1st line treatments for chronic myeloid leukaemia (CML), dasatinib and imatinib was performed from the Spanish National Health System perspective.

Methods

- Ten different cost levers for four sources of value (response, adverse event, adherence and monitoring) were identified (Figure 1). Cost implications of dose escalation, due to limited response or loss of response, was assessed but was not relevant to Spain. The final economic results for Spain will only reflect 9 cost levers.

Figure 1. Overview of the cost levers of the RVA



- Total cost (€, 2012) of each therapy was estimated over 5-years, with an annual discount rate 3% for cost¹, by summing the cost levers and drug costs. As a result, average costs per patient/year are presented
- For pharmaceutical cost of treatments, ex-factory prices with 7.5% mandatory rebate were used².
- Data sources included literature, a national health cost database³ and opinion of a 5 members expert panel (clinicians and hospital pharmacist). Methodology details have been previously reported⁴.
- Sensitivity analyses were performed to test model robustness, and to identify key cost drivers.
- A decision model describing patient pathways was built based on the European Leukemia Net recommendations⁵ and Spanish expert panel. (Figure 2)
- The model was run for 1,000 patients initiated on each drug: dasatinib (100mg, QD) or imatinib (400mg, QD).
- Response rates (Table 1) and intolerance rates for therapies at each decision point were based on main clinical trial outcomes. Imatinib rates were weighted

- based on the size of the treatment arms in DASISION^{7,9} and ENESTnd trials^{8,10}.
- Switching the initial treatment was allowed in cases of limited response (including failure and suboptimal response) or intolerance.
- Doses adjustments to imatinib (300mg, QD) and dasatinib (70mg, QD) were also allowed.

Figure 2. Patient Pathway

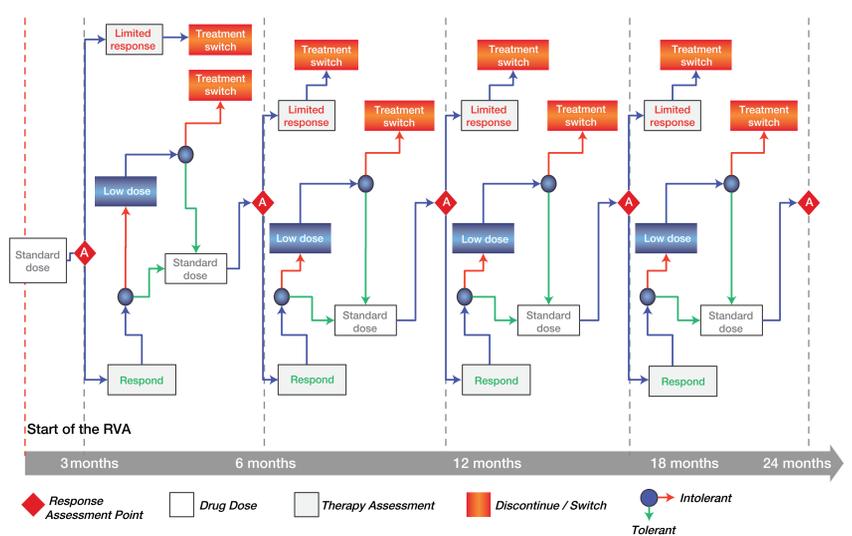


Table 1. Response rates

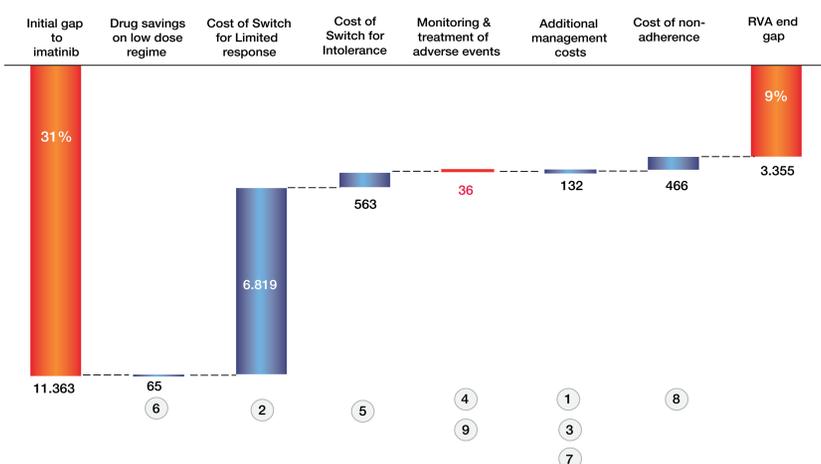
	Reference value	Imatinib	Dasatinib
3 months	RHC	88% ⁶	100% ¹¹
6 months	RCgM	80% ⁶	98% ¹¹
12 months	RCgC	68% (average 7,8)	83% ⁷
18 months	RMM	36% (average 8,9)	56% ⁹
24 months	RMM	41,5% (average 9,10)	64% ⁹

CHR: Complete hematologic response; MCyR: Major cytogenetic response; CCyR: Complete cytogenetic response; MMR: Major molecular response

Results

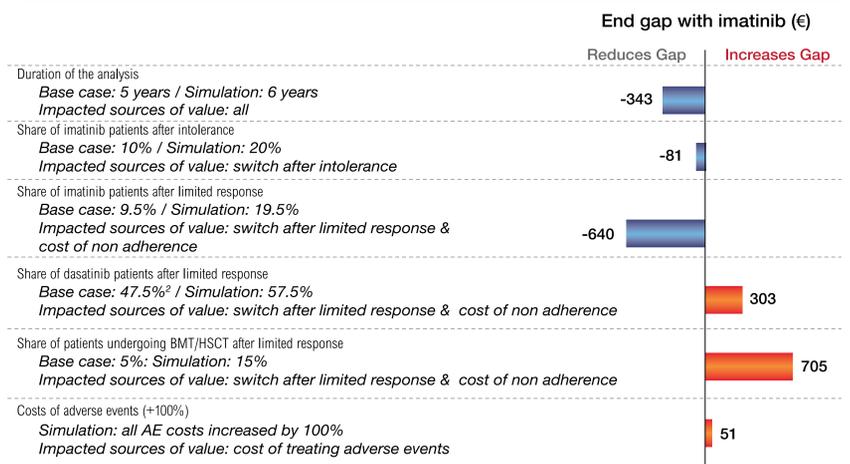
- Average difference in drug cost of dasatinib is estimated to be €11,363 per patient per year compared to imatinib. (Figure 3)
- However dasatinib compared to imatinib is associated with savings in other management costs:
 - Cases of low dose regimens saved €65 per patient/year.
 - Switching for limited response decreased costs by up to €6,819 per patient/year, and switching for intolerance saved €563 per patient/year.
 - Cost of non-adherence and other additional management were reduced €466 and €132 per patient/year.

Figure 3. 5-year RVA of dasatinib vs. imatinib regimes (€/patient/year)



- Monitoring and treatment of adverse events increased the total cost by €36 per patient/year with dasatinib.
- The final incremental total cost of dasatinib compared to imatinib, resulting from the RVA was €3,355 per patient/year.
- In the sensitivity analyses the 2 drivers associated to major reductions in the incremental cost of dasatinib were increasing the time horizon and the share of imatinib patients after limited response. Increasing the share of patients undergoing BMT/HSCT after limited response and share of dasatinib patients after limited response increased the final total cost difference. (Figure 4)

Figure 4. Sensitivity analysis results



Conclusions

- The average incremental drug cost of dasatinib versus imatinib as 1st line treatment for CML, €11,363 per patient/year (31%) is reduced to €3,355 per patient/year (9%) if the cost consequences of the events and clinical management over 5 years are considered.
- Moderate cost of therapy differences need to be seen in the context of very different clinical end points for those remaining on treatment (MMR response rates, figure 1) for these two alternative therapies (24m: imatinib 41.5%; dasatinib 64%).
- The design of the RVA model and its results rely on assumptions and on clinical data. Methodology details has been previously reported.⁴

References

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