Cost-effectiveness of current treatment options in treatment-resistant HIV/AIDS patients in the German setting

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Abstract

Objectives
To perform a comprehensive economic evaluation of all pharmaceutical options in treatment-experienced HIV/AIDS patients in Germany, using the efficiency frontier approach, a method proposed by the German authorities.

Methods
Ten published, randomised, controlled trials were identified for the target population (POWER 1 and 2, RESIST-1 and 2, MOTIVATE 1 and 2, Duet-1 and 2, BENCHMRK-1 and 2), from which we extracted: baseline characteristics; percentage of patients with viral load <50 copies/mL at Week 48 (response rates); enfuvirtide (ENF) use as co-medication and its impact on response; and all antiretroviral (ARV) therapies used. Unit drug costs were obtained from Rote Liste. The results of all treatment arms (average and ± ENF) were plotted on a coordinate system with annual drug costs per patient ('cost') on the horizontal axis and response rates over 1 year ('value') on the vertical axis. The latter was also adjusted for baseline characteristics using logistic regression on pooled data of the Duet trials. Statistical uncertainty analysis was performed using a probability density approach with 1,000 simulations determining the probability that a given option falls on the efficiency frontier, i.e. offers the best value/cost.

Results
Twenty-six value/cost points were created representing all options. Drug costs per year per patient varied between €22,186 and €61,715 and response rates varied between 8.4% and 69.3% in the base case. Etravirine (ETR; TMC125) combinations were most likely to fall on the efficiency frontier (95.2% chance), followed by raltegravir (RAL; 16.6%). The last line segment of the frontier had a slope of €1,796 (95% confidence interval [CI]: €967–€3,072) per extra percentage response.

Conclusions
Constructing an efficiency frontier plot was feasible using adjustment for baseline characteristics. Regimens containing ETR are most likely to be economically efficient. Longer term evaluations including all healthcare costs could add valuable information, but would require many assumptions given the limited available data for the 26 compared strategies.

References

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Conclusions
• Constructing an efficiency frontier plot was feasible using clinical trial results of treatment-resistant HIV/AIDS patients
• However, available trial data limits adjustment possibilities, length of time horizon, and estimation of a wide range of outcomes
• After adjustment, ETR-containing regimens are most likely to be on the efficiency frontier plotting <50 copies/mL endpoint and drug costs, and may therefore represent efficient options for treatment-resistant HIV/AIDS patients on these parameters.