Survival modelling and cost-effectiveness analysis of treatments for newly diagnosed metastatic hormone-sensitive prostate cancer.

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In metastatic hormone-sensitive prostate cancer (mHSPC) treatment, survival benefits have been shown by adding docetaxel or recent androgen receptor axis-targeted therapies (ARATs) abiraterone, apalutamide, or enzalutamide to androgen deprivation therapy (ADT). However, the optimal treatment strategy in terms of costs and effects is unclear, not least due to high ARAT costs.; To assess treatment cost-effectiveness, we developed a Markov cohort model with health states of progression-free disease, progressive disease and death for men with newly diagnosed mHSPC, with a 30-year time horizon. Survival data, adverse events and utilities were informed by randomized controlled trial results, our meta-analysis of re-created individual patient survival data, and publicly available sources of unit costs. We applied a Swiss healthcare payer perspective and discounted costs and effects by 3%.; We found a significant overall survival benefit for ADT+abiraterone versus ADT+docetaxel. The corresponding incremental cost-effectiveness ratio (ICER) was predicted to be EUR 39,814 per quality-adjusted life-year (QALY) gained. ADT+apalutamide and ADT+enzalutamide incurred higher costs and lower QALYs compared to ADT+abiraterone. For all ARATs, drug costs constituted the most substantial cost component. Results were stable except for a large univariable reduction in the pre-progression utility under ADT+abiraterone and very large variations in drug prices.; Our model projected ADT+abiraterone to be cost-effective compared to ADT+docetaxel at a willingness-to-pay threshold of EUR 70,400/QALY (CHF 100,000 applying purchasing power parities). Given lower estimated QALYs for ADT+apalutamide and ADT+enzalutamide compared to ADT+abiraterone, the former only became cost-effective (the preferred) treatment option(s) at substantial 75-80% (80-90%) price reductions.

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