PP12 Projecting The Potential Impact Of Disease-Modifying Therapies For Alzheimer's Disease On The Carbon Emissions From Hospital Bed-Days in the UK

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Introduction: Disease-modifying therapies (DMTs) for Alzheimer's disease (AD) are emerging treatment options. This study aimed to estimate the potential health system and associated environmental impacts of DMTs by modeling future bed-days and carbon dioxide equivalent (CO_2e) emissions for the UK population under various scenarios for access to and efficacy of DMTs.
Methods: A cohort Markov model was developed to predict the UK population distribution from 2020 to 2040 across five health states—cognitively unimpaired and four stages of AD (mild cognitive impairment, and mild, moderate, severe dementia). These distributions were estimated using national population projections, AD prevalence data, and stage-specific transition rates. Annual bed-days per person for each state and associated CO_2e emissions from published literature were applied to estimate total bed-days and emissions. Modeled scenarios combined ranges of DMT efficacy estimates (20 to 30%) and access levels (25 to 58% eligible patients receiving treatment) elicited from expert opinion to explore the extent of potential DMT impacts.
Results: Without DMT access, annual bed-days across the four AD stages were projected to increase from 5.5 million to 8.6 million from 2020 to 2040, with cumulative bed-days totaling 140 million. Associated annual emissions increased from 0.7 Mt to 1.1 Mt CO_2e, reaching 17 Mt CO_2e cumulatively from 2020 to 2040. Under the various high-access (58% eligible patients treated) DMT efficacy scenarios, relative to no DMT access, annual reductions of 430 thousand to 650 thousand bed-days and 54 kt to 81 kt CO_2e were estimated by 2040, and cumulative emissions decreased by 419 kt to 633 kt CO_2e. Decreasing DMT access to 25 percent, assuming 25 percent DMT efficacy, reduced annual bed-days by 230 thousand by 2040, and annual emission savings decreased to 29 kt CO_2e.
Conclusions: DMTs for AD may contribute to efforts by healthcare systems to reduce the carbon emissions from hospital inpatient care. Environmental sustainability should be considered as part of a holistic value proposition when assessing the benefits of new medicines.

PP13 Cost-Effectiveness Analysis Of Antiandrogen Therapies For Metastatic Castration-Sensitive Prostate Cancer: The Brazilian Healthcare System Perspective

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Introduction: Brazilian Unified Health System (SUS) Clinical Practice Guidelines (CPG) for prostate cancer recommend the use of androgen deprivation therapy (ADT) ± docetaxel for metastatic castration-sensitive patients (mCSPC). However, new medications have been developed since the last CPG update. We assessed the cost-effectiveness of abiraterone, apalutamide, darolutamide, and enzalutamide for mCSPC as part of the CPG update process.
Methods: A cost–utility analysis was built, with partitioned survival model composed of three states: progression-free, evidence of radiological progression, and death. The overall survival (OS) and progression-free survival (PFS) curves from docetaxel STAMPEDE trial were extrapolated using different distributions for a 20-year horizon. Visual inspection, clinical plausibility, and Akaike information criterion (AIC)/Bayesian information criterion (BIC) tests were considered to choose the best fit, which were adjusted by hazard ratios (HR) from indirect comparisons of interventions with docetaxel. Utility and disutility values were identified from the literature. Direct costs of medications and pre- and post-progression disease monitoring were considered. We considered a BRL120,000/quality-adjusted life year (QALY) (i.e., USD24,511) cost-effectiveness threshold.
Results: When compared to docetaxel+ADT, interventions with higher effectiveness gains were abiraterone+docetaxel and darolutamide+docetaxel (0.94 and 0.99 QALY, respectively). Apalutamide and enzalutamide showed the highest incremental cost (BLR637,342 and BLR516,313, [i.e., USD130,187 and USD105,465], respectively). Abiraterone monotherapy or +docetaxel presented the lowest incremental cost–utility ratio (ICUR) (BLR84,960 and BLR79,428/QALY gained [i.e., USD17,354 and USD16,224], respectively) and may be cost effective for the SUS. Apalutamide, enzalutamide, and darolutamide may not be cost effective for the SUS as ICUR were higher than the cost-effectiveness threshold. Probabilistic sensitivity analyses or using different distributions for survival curves confirmed the direction of the findings.
Conclusions: Recent studies have demonstrated that adding docetaxel or antiandrogen drugs to ADT in men with mCSPC can improve OS and PFS compared with ADT alone. However, in this analysis, only abiraterone was cost effective, and the incorporation of apalutamide, darolutamide, and enzalutamide would require substantial price reductions to be cost effective for the SUS.

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