COMPARISON OF TWO METHODS TO DETERMINE COSTS FOR AML PATIENTS IN REMISSION: MODEL VALIDATION FROM A UK PERSPECTIVE

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OBJECTIVES: To compare expected costs per AML patient in remission using decision tree and cost-in-use analysis based on a comparative 10-country phase III clinical trial. METHODS: Using a five-year time horizon, costs were estimated from the payor’s perspective for patients in their first complete remission from AML. Clinical endpoints were remission (Leukemia Free), relapse and death. Resources consumed were taken from the clinical trial data and supplemented with cost information from the literature and advisors (for patients in relapse). Comparators were histamine dihydrochloride + low dose interleukin-2 (n = 129) vs. standard of care (n = 132). Unit costs were taken from UK sources including NHS reference cost, British National Formulary 56, National Blood Services and the literature for concomitant medications, blood products, emergency room visits, physician visits and relapses. Cost for interleukin was included; however, the investigated drug cost was not included in the analysis as no price has been set to date. We computed the expected cost by treatment for each method, using a 5% discount rate. RESULTS: Overall 5 year Leukemia Free Survival for treatment vs. standard of care was 2.23 vs 1.75 (P = 0.02), respectively. Expected costs per treatment arm for the tree method, treatment vs standard of care, were £40,725 vs. £39,371, respectively, while for the cost-in-use method, treatment vs. standard, £40,209 vs £41,721 respectively. This estimated expected cost for the treatment arm by 1.3%, and underestimated the cost for the standard of care by 5.6%. CONCLUSIONS: The two methods estimated similar values. However, the cost-in-use method yields a more accurate estimate compared to the tree method because the tree method does not adjust for events that take place between nodes, thus possibly introducing error. The cost-in-use method captures resources with known time points, minimizing over- or under-reporting of resources consumed.

USING MIXED TREATMENT COMPARISON MODELING TO COMPARE PROPORTIONS OF NAIVE HBsAg(+) CHB PATIENTS WHO ACHIEVED UNRECORDED HBV DNA

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BACKGROUND: Mixed treatment comparisons (MTC) is useful in comparing treatments when not all treatment-pairs have available head-to-head data. A previous MTC analysis (Dakin & James, EASL 2008) showed results that are inconsistent with observed data from clinical trials. We conducted analyses to understand how changing assumptions/implementations affect the MTC results. OBJECTIVES: To evaluate the performance of different MTC models in assessing the relative efficacy of available nucleoside/di nucleotides and combinations in antiviral-naive patients with HBsAg+ CHB. METHODS: Proportions of HBsAg(+) CHB patients with undetectable HBV DNA at Year 1 were from published trials referenced in D&C. Bayesian MTC analyses were conducted using models and assumptions proposed in Higgins and Whitehead (H&W, 1996), L&A (L&A-Unconstrained and L&A-Constrained, 2004), and the H&W estimates were very similar to D&C results. The estimated proportions from L&A-C are most consistent with observed data (see Table). RESULTS: Compared with the most unanimous MTC analyses (H&W and D&C), the L&A-C model is able to better predict observed results than either the D&C, H&W or L&A-U. With limited data, MTC results can vary across models and model performance should be evaluated against observed data. Proportion of patients achieving undetectable HBV DNA at Year 1: The treatments (No Trials) for TDF(1): 74%, 75.6% (55.9%, 91.1%), 73.9% (80.0%, 99.3%), ETH(3): 70.1% (58.8%-76%), 67.9% (54.8%, 78.6%), 62.9% (44.8%, 81.7%), TEL(3): 49%, 48.3% (25.6%, 72.1%), 53.3% (21.9%, 84.3%), ADV(4) 21% (10%-40%), 23.7% (14.7%, 37.1%), 48.8% (25.8%, 77.5%), LAM(6): 38.9% (32%-43%), 37.3% (26.7%, 46.9%), 38.4% (33.9%, 42.8%), ADV-LAM(3): 39%, 37.5% (17.6%, 61.8%), 37.5% (12.5%, 68.7%), PLB(2): 3.7% (0%-17%), 4.7% (1.6%, 9.9%), 7.1% (1.5%, 18.5%) for Weighted Average* (Min-Max) Observed, L&A-C Implementation2, D&C EASL20081. I-By sample size; 2-Estimates (95% Bayesian Credible Interval). CONCLUSIONS: The two MTC methods can provide consistent estimates to be achieved, several strong conditions must hold. We review the definition of an instrumental variable, describe the conditions required to obtain consistent estimates of causal effects, and explore their implications in the context of a recent application of the instrumental variables approach. METHOD: instrumental variables and apply Sha’s partial R-square method, the Anderson canonical correlation, and Cragg-Donald tests to check for weak instruments. Hall-Piesz tests are applied to see if any of these instruments are redundant in the analysis. RESULTS: Total 15,956 asthma patients from a private payer data set were examined in this study. We used controller-reliever copay ratio and physician/practice prescribing patterns as an instrument. We demonstrated that the former was a weak and redundant instrument producing inconsistent and inefficient estimates of the effect of treatment. The results were worse than the results from standard regression analysis. CONCLUSIONS: Despite the obvious benefit of instrumental variable models, the method should not be used blindly. Several strong conditions are required for these models to work, and each of them should be tested. Otherwise, the results will be statistically worse than the results achieved by simply using standard ordinary least squares.