Cost-effectiveness analysis of HLA-B*58:01 genetic testing before initiation of allopurinol therapy to prevent allopurinol-induced Stevens-Johnson syndrome/toxic epidermal necrolysis in a Malaysian population.

OBJECTIVE: Studies found a strong association between allopurinol-induced Stevens-Johnson syndrome (SJS)/toxic epidermal necrolysis (TEN) and the HLA-B*58:01 allele. HLA-B*58:01 screening-guided therapy may mitigate the risk of allopurinol-induced SJS/TEN. This study aimed to evaluate the cost-effectiveness of HLA-B*58:01 screening before allopurinol therapy initiation compared with the current practice of no screening for Malaysian patients with chronic gout in whom a hyperuricemic agent is indicated.

METHODS: This cost-effectiveness analysis adopted a societal perspective with a lifetime horizon. A decision tree model coupled with Markov models were developed to estimate costs and outcomes, represented by quality-adjusted life-years (QALYs) gained, of three treatment strategies: (a) current practice (allopurinol initiation without HLA-B*58:01 screening), (b) HLA-B*58:01 screening before allopurinol initiation, and (c) alternative treatment (probenecid) without HLA-B*58:01 screening. The model was populated with data from literature review, meta-analysis, and published government documents. Cost values were adjusted for the year 2016, with costs and health outcomes discounted at 5% per annum. A series of sensitivity analyses including probabilistic sensitivity analysis were carried out to determine the robustness of the findings.

RESULTS: Both HLA-B*58:01 screening and probenecid prescribing were dominated by current practice. Compared with current practice, HLA-B*58:01 screening resulted in 5.253 QALYs per patient at an additional cost of USD 322, whereas probenecid prescribing resulted in 6.250 QALYs per patient at an additional cost of USD 203. One SJS/TEN case would be avoided for every 556 patients screened. At the cost-effectiveness threshold of USD 50,000 per QALY, the probability of current practice being the best choice was 99.9%, in contrast with 0.1% and 0% in HLA-B*58:01 screening and probenecid prescribing, respectively. This is because of the low incidence of allopurinol-induced SJS/TEN in Malaysia and the lower efficacy of probenecid compared with allopurinol in gout control.

CONCLUSION: This analysis showed that HLA-B*58:01 genetic testing before allopurinol initiation is unlikely to be a cost-effective intervention in Malaysia.